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ABSTRACT

This thesis describes computer-mediated communication between 15 health and physical education preservice teachers at the University of Regina (Saskatchewan, Canada) and a faculty contact person during the field experience. Discourse using an interactive computer network system called UNIBASE was analyzed to examine communication patterns on the bulletin board, in the electronic journal, and in real time conferences. Other data were gathered from a survey of the participants and interviews with three frequent users. Analysis of the data indicates that the purposes for communication were guided by the roles, needs, and goals of the individuals. The intent of most messages by the preservice teachers was to offer information. The faculty contact person offered support, information, and advice. Curriculum and planning ideas were shared between the preservice teachers and the faculty contact person. The mean score for usefulness for exchanging teaching techniques was 3.92 on a 1 to 5 scale. The electronic journal was used for reflection on teaching practice. The intellectual exchange and social support gained through dialogue was important in helping preservice teachers clarify what they believe good teaching practices should be. Appendices contain project administration materials, a summary of system usage by participant, and descriptions of codes used in discourse analysis. (Contains 40 references.) (JDD)

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ED 382 578

COMPUTER-MEDIATED COMMUNICATION: FACULTY AND STUDENT CONVERSATIONS DURING THE FIELD EXPERIENCE

A Thesis

Submitted to the Faculty of Graduate Studies and Research

In Partial Fulfilment of the Requirements

For the Degree of

Master of Education

in Curriculum and Instruction

Faculty of Education

University of Regina

by

Ethelwyn June Dzuba

Regina, Saskatchewan

October, 1994

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ABSTRACT

This thesis presents a description of computer-mediated communication between preservice teachers and a faculty contact person during the field experience. Fifteen health and physical education preservice teachers participated in the study conducted on UNIBASE during internship in the 1992 Fall semester. Discourse analysis was used to examine communication patterns on the bulletin board, in the electronic journal, and in real time conferences. The analysis of data from computer transcripts, a questionnaire, and interviews with three high users describes the purposes for communication, topics of discussion, and communication patterns that emerged. Purposes for communication appeared to be guided by the roles, needs, and goals of the individuals. The intent of most messages by the preservice teachers was to offer information. The faculty contact person offered support, information and advice. Curriculum and planning ideas were shared between the preservice teachers and the faculty contact person. The mean score for usefulness for exchanging teaching techniques was 3.92 on a 1-5 scale. The electronic journal was used for reflection on teaching practice. The third question was about emerging patterns of communication. Network conversations provided opportunities for problem-solving. The varied nature of the preservice teachers' experiences and teaching contexts provided a broad perspective on schooling. The intellectual exchange and social support gained through dialogue was

important in helping preservice teachers clarify what they believe good teaching practices should be.

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

Introduction

Experience in school classrooms is part of the professional development of preservice teachers each year at the University of Regina. Teacher preparation begins with an introduction to schooling in the first year. Basic teaching skills and strategies are practised in the second and third years. A guided 16-week practicum, known as internship, normally occurs in the first semester of the fourth year.

Internship at the University of Regina provides preservice teachers with opportunities for personal and professional development. Before internship, preservice teachers develop basic and more advanced instructional skills, practices, and procedures through a cycle of lecture and modelling, controlled practice, and school practice. Reflection, after lectures and practice, is a key element in this cycle. Throughout the program, a school teacher in the classroom and a faculty contact person from the university help each student develop professionally.

The goals of internship for the preservice teacher are to confirm basic teaching skills and practices, to develop complex teaching procedures, and to conceptualize the role of a professional in the school and community. Preservice teachers are expected to learn a variety of instructional

approaches. They also are expected to show initiative and solve problems (Joint Field Experience Committee, 1991).

Since the fall of 1989, computer-mediated communication was used by some health and physical education preservice teachers during internship. In workshops, before internship, students learned how to use an electronic information network. Using a computer, they developed the ability to search for information, and to send and receive messages.

This study is a description of fourth year health and physical education preservice teachers' interactions on a computer network during internship.

Electronic Communication

The electronic choices available to preservice teachers to communicate with each other and the faculty contact person were the bulletin board, electronic mail, and interactive conferencing. Journal entries were posted to the faculty contact person in a special area on the communication network. The network system used was UNIBASE.

UNIBASE is an interactive computer network for educators. A network goal is to stimulate professional development through technology. The network provides access to curriculum instruction resources, local and distant libraries, and some Internet resources. UNIBASE subscribers can

choose multi-level conferences, electronic mail, or bulletin board postings to communicate.

The UNIBASE electronic library contains full text articles, newspaper headlines and clippings, instructional support materials, and selected software. Users have access to resource databases at the University of Regina, University of Saskatchewan, and the Regina Public Library. Databases of lesson plans and other classroom resources are available for special education, Native education, health education, and physical education. UNIBASE also has a link to educational resources on the Internet.

UNIBASE subscribers can send and receive messages in three ways: (a) posted messages in an electronic bulletin board, (b) electronic mail, or (c) interactive (real time) conferences. If a message is posted on the bulletin board, others can read the message, enter a response, and post it to the bulletin board. A subscriber can respond whenever it is convenient.

Network members can exchange mail. Users mail a message to a specific individual or group of individuals. When the message arrives at its destination, the receiver may choose to read and respond to the message.

Users on the system also can communicate through real time, interactive conferences. Interactive conferencing involves meeting "on-line" either at a specified time or impromptu. Users talk to each other by sending

and receiving messages through electronically-connected computers. Conversations are electronic exchanges between two or more persons in real time. Real time is the term often used to describe the simultaneous interactive exchanges between users on an electronic computer system.

Need for the Study

In the 1989 fall semester some health and physical education preservice teachers used the computer to communicate during internship. Lack of suitable electronic equipment in the schools was a barrier. However, eight preservice teachers owned personal computers which they used to communicate. In the 1990 winter semester some students in the health and physical education subject area pre-internship class learned electronic communication skills. Fifteen preservice teachers showed an interest in using electronic communication during their internship. Eight schools had hardware to support the project. During the 1991 winter semester, 37 students in seven different subject areas received computer-mediated communication instruction. About 75% of the internship placement schools had suitable equipment. (R.S. Petracek, personal communication, February 15, 1992)

Health and physical education preservice teachers said they used computer-mediated communication to share field experiences, to gather

information for curriculum development, and to maintain personal and professional contact (Calnek, L., Petracek, R., Goddard, T., Kuntz, K., Pachiorka, M., Pritchard, S., & Yeske, K., 1991). There is evidence that students display a personal and professional interest in using computer-mediated communication during internship.

Computer communication is becoming more common everyday. Beals (1989, 1992), Cutler (1992), and Merseth (1990, 1991) examined the quality of exchange between novice teachers on the Beginning Teacher Computer Network (BTCN). Beals (1992) stated the network data provided a rich new database for psychological, sociological, and linguistic research. Findings from three studies examining messages on the BTCN showed the following: (1) personal events get a greater response (Beals, 1991), (2) social roles affect the purpose and style of communication (Beals, 1989), and (3) network discussion topics reflect some of the concerns of beginning teachers (Cutler, 1992; Merseth, 1990, 1991).

Mason (1992) and Henri (1992) questioned the processes and understandings occurring in computer-mediated communication. Guertin (In Henri, 1992) reported low-interactive users consider themselves to have learned from reading co-learners' messages. Kerr and Hiltz (In Waggoner, 1992) cite communication skills, previous related experience, and physical or intellectual abilities as factors in the success of computer conferencing.

Kaye (1992) reviewed research methods used to understand computer conferencing. He recommended that researchers find a method that reveals information about the content of the messages. He also stated, the perceptions and intentions of the users should be examined. For these reasons, the need to study faculty and student computer-mediated communication was recognized.

Significance of the Study

Computer-mediated communication adds another dimension to internship supervision. Software on the communication system can capture the electronic dialogue between preservice teachers and a faculty contact person. Examination of that dialogue may provide significant information about the thoughts, concerns, and decisions of preservice teachers. A study of this dialogue could provide useful information about internship.

Purpose of the Study

The purpose of this study was to discover the nature of the interactions between preservice teachers and the faculty contact person during the 16-week internship. Patterns of communication were identified. Specifically, the following questions were addressed:

1. For what purposes did health and physical education preservice teachers and the faculty contact person use computer-mediated communication to interact during internship?

2. What topics were discussed by health and physical education preservice teachers and the faculty contact person during internship?

3. What patterns of communication emerged in computer-mediated discussions by health and physical education preservice teachers and the faculty contact person during internship?

Research data included transcripts of preservice teacher and faculty computer-mediated communications. A questionnaire and three structured interviews were used to explore assumptions about the use of the computer during the field experience. The compilation of results describes fifteen health and physical education preservice teachers' interactions with a faculty contact person on an electronic network during internship.

Limitations of the Study

This study was limited to health and physical education students at the University of Regina. They were taught the skills of computer-mediated communication during their course studies. Instruction was provided in two workshops and an optional refresher course. A technical assistant was on-line during internship to help those who needed assistance. Some

participants were familiar with electronic communication while others were learning to use the system. A pre-test was not conducted to assess skills.

The participants in this study were volunteers. There was no requirement to read, send, or post messages. Participants could use the network whenever they wished. The number of logons, duration of time, and communication purpose were not prescribed. Therefore, the data collected is limited by the participants' use of the computer network during internship.

Access to electronic equipment was another limitation. At the beginning of internship, the participants were asked to assess computer resources in the school. A needs assessment survey was conducted by telephone in September. The network operator supplied modems and other equipment as needed. Initially, the lack of equipment may have affected the amount of data generated.

Personal electronic messages were not collected. Data for the study included posted messages on the bulletin board and in the journal. Real time conversations were saved manually by the technical assistant. Data analysis did not include personal mail or impromptu conferences.

The technical assistant encouraged participants to use the network by sending public and personal messages. Messages sent by him may have influenced the thinking, concerns, and decisions of the preservice teachers.

The focus of the study was on health and physical education preservice teachers' interactions on an electronic network during the field experience. Discourse analysis was used to examine interactions for purpose and content. The study may be limited by the categories of selected linguistic and teacher education topics used to code the function and content of messages.

The social organization used in this study included the preservice teachers, a technical assistant, and a faculty contact person. While members of the UNIBASE network did not share a physical context, there were common aspects of the social context that may have encouraged network communication. Preservice teachers had taken courses together. Some of these courses were taught by the faculty contact person. The technical assistant and the preservice teachers attended the same course introducing computer-mediated communication applications. These pre-established relationships may have encouraged participants to willingly share.

Definition of Terms

The following terms are used.

Bulletin board. A bulletin board is a series of messages posted electronically in a special area and stored in the central computer memory.

Others on the system may tap into the memory, scan a message, type a response, and return an entry to the bulletin board. This format eases group discussions (Chesebro & Bonsall, 1989).

Communication participants. Communication participants appear to possess complex cognitive skills needed to select and process textual stimuli and to alter and integrate these stimuli to restructure a meaning (Chesebro & Bonsall, 1989).

Computer conferencing. Computer conferencing is an electronic approach to real life conversation. Participants meet to communicate using the computer as the communication vehicle. A user sends and receives response(s) to message(s) alternately. Verbal exchanges occur via a keyboard (Chesebro & Bonsall, 1989).

Computer-mediated communication. Computers are the vehicle in this form of communication. Computers take an entered message, return it to the user, or send it to others (Chesebro & Bonsall, 1989).

Co-operating teacher. A co-operating teacher is a certified teacher in the school. This person guides the preservice teacher's internship experience from a schooling perspective.

Electronic mail. Electronic mail is a postal service that sends and distributes messages through a computerized system (Chesebro & Bonsall, 1989).

Faculty contact person. The faculty contact person is a faculty member at the University of Regina who supervises interns during the internship.

Field experience. The field experience generally refers to any teaching experience in a school setting. For the purposes of this study, field experience refers to the 16-week internship practicum in a school.

Interactive conferences. An interactive conference occurs when two or more persons send and receive messages in real time.

Intern. An intern is a preservice teacher placed in the school under the supervision of a co-operating teacher for a 16 week practicum.

Internship. Internship is the 16-week practicum undertaken by preservice teachers usually in the first semester of the last year of teacher education.

Logon. When users sign on to the computer network they enter a codename. This procedure is known as logging on. The codename provides access to a personal message account. The electronic system records the time when this procedure is executed.

Log off. A procedure known as logging off is executed when users close their accounts on the computer system. This time is also recorded by the electronic system.

Move. Move is identified by linguists as the smallest unit in discourse. It is a series of acts, and occupies a place in the structure of exchanges (Sinclair & Coulthard, 1975).

Network. A network is a potential source and opportunity for information exchange, specialized programming, and development of interpersonal relationships (Chesebro & Bonsall, 1989).

Non-real time conferences. Non-real time conferences occur at the convenience of the user. Messages are posted and read on a bulletin board when it is convenient.

Posted conference. A posted conference engages bulletin board users in sending and receiving messages at their convenience. It is a non-real time conference form.

Preservice teacher. A preservice teacher is a student enrolled in a teacher education program learning to teach.

Real time. A real time interaction is one which simultaneously involves two or more participants in a conversation which is characterized by no significant time lapse.

Real time conferences. A real time conference is an interactive conference that engages two or more persons in sending and receiving messages simultaneously.

Speech act. Speech act is a linguistic term used for identifying the intent or purpose of communication. It is distinct from a sentence, not identifiable with any part of grammar (Sinclair & Coulthard, 1975).

Topic. A topic is the sequence of two or more related messages expressing the same concern (Sinclair & Coulthard, 1975).

Transmission of information by computer. Personal messages, social, and task-group messages are sent electronically through the computer system (Chesebro & Bonsall, 1989).

Conclusion

This study was influenced by the research conducted at the Harvard Graduate School of Education (Beals, 1989; Cutler, 1992). Discourse analysis was used to investigate the purpose and content of messages. A questionnaire distributed to participants after the field experience and interviews with three high users were conducted to clarify the perceptions and intentions of the users.

The most significant reason for conducting this study was to discover the kinds of interactions between preservice teachers and the faculty contact person during internship. The study focuses on the function and content of computer messages and on patterns of communication that emerge. The

thoughts, feelings, and concerns of some health and physical education preservice teachers during internship are described and analyzed. Discovering the nature of these interactions has the potential for providing another perspective in the professional development of preservice teachers.

CHAPTER II

REVIEW OF RELATED LITERATURE

Communication by Computer Networks

Introduction

Electronic messages differ in various ways from face-to-face interactions. Three differences are temporal, spatial, and social. Several discussions of computer-mediated communication (Beals, 1989, 1991; Black, Levin, Mehan & Quinn, 1983; Smilowitz, Compton & Flint, 1988) focus on these differences. Schrum (1991) identified two common features. It is a medium of electronic discussion spoken with the same spontaneity and flexibility as face-to-face conversation; and, it can be a useful tool for group communication and co-operative learning. In this review of the related literature, the characteristics of computer-mediated communication will be discussed. Then, the current uses of computer-mediated communication in the field experience will be reviewed.

Temporal Factors

Electronic messages can be read when text is entered and sent using a computer connected to a communication network. The conversation style is

frequently influenced by temporal factors. The delay time that occurs is a particulary prominent factor.

Participants in non-real time interactions retrieve and respond to messages at their convenience. Usually, these messages are posted to a discussion area on the network known as a bulletin board. In some studies (Beals, 1989; Black, et al., 1983), the flow of conversation was graphically represented by message maps. Maps displayed the sequential pursuit of topics across time. "Multiple threads of discourse" were discovered in these interactions by Black et al. (1983).

Messages in posted (non-real time) conferences were found to be informative (Black, et al., 1983). Individuals addressed one or more topics. The temporal delay allowed readers in a discussion to pursue several topics at once. The time used to read and re-read messages allowed individuals to reflect on a topic or topics and formulate a clear response (Beals, 1989).

Holmes (1987) studied how people manage interactions in real time conferences. In these conferences, messages are displayed sequentially, in order of arrival at the central exchange terminal. The frequency and sequence of messages depends on the number of participants in the conference. The time taken to produce and send a message creates a lag. Despite the disorder generated by a linear display of messages, participants

successfully engaged in multiple threads of discourse. Like face to face conversation, participants take turns.

The temporal factor in computer-mediated communication contributes to the ability of individuals to follow multiple threads of discourse. Posted and real time conferences usually address more than one topic. The delay time factor provides an opportunity to reflect on messages, organize thoughts, and respond.

Spatial Factors

Individuals in face-to-face conversations often rely on auditory and visual cues to understand conversation. Their physical proximity and the expressive they use such as intonation, eye contact, and facial expressions are lacking in computer-mediated communication. Because users make their intent explicit, Beals (1992) argued, network transcripts are more readable and easier to interpret than transcripts of face-to-face conversations.

Beals (1989) and Holmes (1987) found that users devise textual expressives in the message such as extra punctuation, asterisks, and multiple vowels. Sometimes icons were used to compensate for non-verbal information. Commas, dashes, or colons were used as attention motivators. They also replaced pauses in conversation. Because of this, users in computer-mediated discussions do not lose their turn.

The computer screen could contain messages from several individuals participating in various conversations. Holmes (1987) sorted messages in terms of the relevance of topic. Relevance is maintained by individuals in conversation through a communication pattern known as adjacency pairs or turn taking. Greetings were followed by greetings; a summons was followed by an answer.

A useful analogy for conversation in computer-mediated communication is to imagine a thread of discourse woven of several strands. Topic shift is a matter of moving from thread to thread as well as starting new threads (Holmes, 1987).

Black et al. (1983) examined discourse threads in non-real time and in real time. They concluded real-time conferences restricted cognitive processing. Holmes (1987) argued users switch from one thread to another. Norman stated, "When there is a possibility of attending to parallel discourse events, an individual will still participate in only one (event) at a time" (In Holmes, 1987, p. 19).

Morrison (1993) examined critical thinking in non-real time. Students who could organize and synthesize ideas were succesful. Those who were not successful had difficulty in keeping track of comments and messages.

Individuals sending and receiving computer-mediated messages adapt a conversation style that expresses their thoughts and feelings as if they were sharing the same physical environment. The presence of multiple threads of

discourse in computer-mediated messages challenges individuals to organize and synthesize ideas. Successful participants track comments and messages as topics shift from one thread of discourse to another.

Social Factors

The participants, their relationship, and the goals of the network shape the type of interaction that occurs (Beals, 1989, 1992). Context clues such as appearance, age, dress, or physical disabilities are absent. The lack of context clues such as head nodding or hearing someone's voice may affect negotiations in conversation (Kiesler, Siegel, & McGuire, 1984).

Users adapt to computer communication because they bring certain expectations to the situation (Adkins, 1991). Senders and receivers are not looking for context cues. This could explain why charismatic persons have less influence and group members participate more equally in computer-mediated communication (Kiesler et al., 1984).

Adkins (1991) noted computer-mediated messages were cluttered with "I's" and "me's". These personal references did not influence the receiver's perception of the sender. Berstein (In Adkins, 1991) suggested personal aspects of language are not interpreted as egotistical unless value is placed on this type of language.

Beals (1991) found personal narratives were longer and more emotionally charged than general descriptions of classroom events. They also drew more responses.

Waugh, Miyake, Levin & Cohen (1988) examined the ability of users to solve problems on a computer network. They concluded that multiple points of view help participants appreciate the many different dimensions of a problem. They said network-based problem-solving is less restrictive and more discovery-oriented.

Smilowitz, Compton and Flint (1988) found the effects of social pressure to conform was less in computer-mediated communication than in face-to-face conversations. The time factor allowed participants to be more critical. Also, absence of face-to-face contact allowed users to hold their position. As a decision making process, Smilowitz et al. (1988) believed computer-mediated communication would be minimally useful. Social dimensions, he said, such as group validation and commitment to choice may be lacking.

In a case study of a graduate seminar, Schrum (1991) found participants felt they had more professional interactions and worked more co-operatively with others than in face-to-face seminars. They thought they had a better relationship with the professor than in other classes. Others as Romiszowski and de Haas (1989) and Ocansey (1989) reported computer-mediated communication was a positive experience in their teacher education program.

The social dimensions of computer-mediated communication allows users to participate without constraint. The absence of context clues enhances participation. Users adapt by expressing themselves more clearly, personally, and emotionally. The presence of multiple points of view assist in problem-solving. Interactions are professional and co-operative.

Computer-Mediated Communication in Teacher Education

The literature on current use of technology in various teacher education programs was reviewed. Specific attention is given to computer-mediated communication in field practica.

University of Michigan

The University of Michigan (Swift & Coxford, 1988) established two computer networks. One was for administrators and teachers in the school system, MICH:EdCorps, and the other for preservice teachers, MICH:TeacherEd. The purpose of MICH:TeacherEd was to reduce isolation for student teachers in the field. Student teachers used the network to interact with peers, teachers, and faculty.

Faculty wanted to give students more time to discuss issues raised in weekly student teaching seminars. The student teachers took part in bulletin board discussions and used personal mail to discuss teaching issues.

Network activity increased progressively. Preservice teachers rated the network positively as an aid to professional development.

University of Virginia

The Curry School of Education at the University of Virginia (Bull, Harris, Lloyd & Short, 1989) created Teacher-LINK. This computer network connected students in the field with their faculty supervisors. One network goal was to minimize isolation of preservice teachers by linking students from wide geographic regions with the university.

The project began as a joint study with IBM Academic Information Systems. Equipment grants went toward the purchase of computers and software. The local telephone company helped defray costs by installing phone lines in each of the classrooms. The Currey School of Education and the various school districts shared operating costs. The initial project became a part of the teacher education program.

Students, faculty, administrators, and teachers were given access to the network. Accounts were set up on the network for students when they enrolled. They kept the account until graduation.

Students and faculty used the network to discuss lesson plans, clarify assignments, share curriculum ideas, and schedule meetings. It was concluded that the field experience was enriched by the communication link.

The network had other uses. Teachers in the classroom enriched curriculum through global telecommunication projects. Administrators organized and managed records and schedules. An electronic link provided access to the university library database.

Use was encouraged during teacher training. The originators of the program hoped that by graduation, student teachers would use the network as fluently as a chalkboard. However, network developers reported a decline in usage after graduation.

Miami University

Brooks and Kopp (1989) reported a computer network project (EDTNet) at Miami University in Oxford, Ohio that linked the School of Education and College of Arts and Science to public school sites. Electronic mail, curriculum content storage, and a bulletin board update were part of an Information Management Model. Individuals could connect to the system from home, office, or school.

The Information Management Model provided continuity throughout the teacher education program. "Introduction to Teaching" files were developed by the faculty and stored on the system as "knowledge base" information. Anyone with a user identification could retrieve a file from the system.

The network extended to student teaching sites. The electronic mail feature allowed student teachers to query professors about issues in the

field. These issues changed the teacher education "knowledge base" as professors continually updated the information files with new research. Thus, the teacher education program was refined by contributions from teachers, students, and faculty.

Maryland University

The Maryland Education Microcomputer Network (MEMN) and Marynet (Heidelbach, 1984) are educational bulletin boards. Teachers from pre-school through twelfth grade were linked with teacher educators and students in the university. Parents and Maryland citizens also participated in the open-exchange process. Regional topic networkers moderated the bulletin board discussions. The network had real time conferencing abilities.

Three studies were conducted on network interactions. One was on the exchange processes in curriculum development. A social studies unit was planned by a group of teachers and consultants. Their paths of communication were traced. A second study of these messages dealt with the cognitive and affective processes. Findings suggested that a different social system existed on the network. Roles developed as users responded to one another. A third study was of network use. Initial findings showed teachers in elementary, middle, and secondary schools used the network more often than others. Preservice teachers used electronic mail to send

assignments to professors, to dialogue journal, and to share teaching experiences.

As a result of the studies another significant group of users was identified. School age children used the network from home sites. Heidelbach (1984) observed their ability to read, write, organize, and edit messages. She recommends further research on the technological capabilities of school age children.

Patterns of use noted by Heidelbach in 1984 were (a) telecommunication activity is beginning, (b) there is activity in homes and in schools, (c) users are highly motivated and futuristic, and (d) administrative constraints effect the development of curriculum.

Iowa State University

The College of Education at Iowa State University (Thompson & Hamilton, 1991) established the Electronic Education Exchange (EEE), an electronic communication network for preservice teachers, beginning teachers, and administrators. The project provided an opportunity for faculty members, classroom teachers, and administrators to exchange ideas with preservice and beginning teachers. A graduate student acted as the system operator. The system operator monitored telecommunication activity, provided training, and solved access problems.

Results were drawn from messages that were counted weekly, examined, and classified. A pre-test and post-test of attitudes, interviews,

and a questionnaire supported the data. Both high users and low users were interviewed. At the end of the project, faculty members completed a questionnaire.

Initially, student teachers had to be motivated to use the network. Activity did not begin until after the first few weeks of student teaching. Techniques that appeared to get the students started were: pairing students with other students, pairing students with faculty, scheduling special interest conferences, conducting face-to-face meetings with student teachers, and making on-site visits to the schools.

Based on analysis of the data certain patterns of use emerged: (a) student teachers communicated most frequently with other student teachers, (b) there were almost 10 times more private messages than public messages, (c) both day and evening hours were popular times to use the system. Students and faculty were positive about the use of the system. Students requested earlier training on how to use the system. Busy phone lines and limited access to computers in the schools and in the university discouraged and limited use.

University of Alabama

The elementary methods block at the University of Alabama set up a communication network for students. Objectives of the network were to improve communication between practising teachers, supervisors, and

faculty during the field placements, to reduce travel costs, and to measure the use of technology (Durham & Sunal, 1991).

The study examined these objectives in four schools. The technology included electronic mail, a fax machine, and a computer communications network. Three schools were used as experimental sites. They had the required equipment. In two of these schools, preservice teachers were encouraged to use the electronic equipment. In the restricted experimental site, the preservice teachers had limited access to the technology. The hours of use and the telephone lines were restricted. The control site used traditional supervisory methods.

Each participant kept a personal journal. This journal included a record of dialogue about teaching practices, with whom and how they communicated. The results of the interactions were recorded.

Data for the study were derived from an attitude survey, student journals, evaluative essays, interviews, and results of the Microteaching Skills Rating System.

Seventy-five percent of the professional contacts were between preservice teachers and their faculty advisors or between preservice teachers and their co-operating teachers. Electronic messages dealt with lesson planning, classroom management, and selected activities. The control school had the fewest contacts per preservice teacher.

It was concluded that the number of communications between faculty and field placement students increased and the ease of communication improved. The research did not report specific details on the use of the fax machine as a part of the study. Computer-mediated communication is now part of the methods block at the University of Alabama.

Harvard Graduate School of Education

The Harvard Graduate School of Education (Merseth, 1990) started a project linking graduates from the teacher education program with supervisors from the college on the Beginning Teacher Computer Network (BTCN). The Education Technology Centre, Harvard University, customized conferencing software to work efficiently with microcomputers. This made it possible for beginning teachers in middle and high schools across the United States to use personal computers to communicate with each other. A toll free telephone number was used to help defray participant cost. The IBM Corporation provided the initial funding.

Transcripts of public messages on the BTCN from 1987-88 were the source of data for three studies (Beals, 1989; Merseth, 1990; Cutler, 1992). Study of mail surveys, computer message counts, and structured follow-up interviews showed that the network was most effective in providing moral support. It was least effective in providing support for curricular planning. Factors that enhanced the ability to provide support included convenience of

the network, ability to reduce feelings of isolation, and the safe, non-evaluative environment that it created. It was recommended that further research be done to address the influence of multiple settings on the articulation of concerns and the development of problem solving strategies for beginning teachers using an electronic network (Merseth, 1990).

Beals found no correlation between levels of participation on the network with age, gender, teacher education program, or location. A method of discourse analysis was used to examine social roles on the network. Beals (1989) reported novices share support, advice and information; faculty members provide information and ease discussion.

Cutler (1992) explored the development of beginning teachers' theories about learning to teach. Qualitative analysis of data reflected a developmental theory of some novice teachers about building practical knowledge about students, learning, teaching, and schooling while they were learning to teach. More research needs to focus on what beginning teachers learn from their experiences. Researchers need to address how teachers construct knowledge about teaching, learning, schools, and schooling.

Simon Fraser University

The Faculty of Education at Simon Fraser University initiated the Surrey Secondary Project. This was a co-operative venture that included

telecommunication links between the university and schools in the Surrey School District (Owen, 1993a). The aim was to use telecommunication as a medium for preservice teachers' reflection on interactions in the field experience. Participants included student teachers, faculty advisors, and a technical assistant. Using the technology to reflect and confirm their experiences caused the student teachers to respond in the following ways (Nilson, 1993):

> *Without it I would have learned different things in different ways.*
>
> *There are many, unique features of MTS (operating system at SFU) that offer an experience distinct from classroom learning. The most important one for me was immediacy. We could enter any Discussion at any time, comment on any topic we chose, in as much detail as we pleased.*
>
> *This instant audience was a vital part of my growth. If I had waited for the next classroom meeting to express a thought, it would have probably seemed stale or been forgotten by then. Each entry was read by every member of the module who signed on, and was therefore validated by a large audience. I didn't need to wait for my turn in a verbal discussion, only to have the discussion change focus, or for class time to run out. I could respond immediately.*

Owen (1993b) noted that "immediacy" and "shared mutual experiences" set a favourable condition for reflection through the development of an electronic community. He found students used the network to ask questions, raise issues, seek advice, and simply communicate. Network use included exchange of information on lesson plans and the sharing of experiences while teaching in the field.

Conclusion

An important reason for electronically linking preservice teachers with faculty members is to encourage communication during the field experience. The objective of most telecommunication projects was to encourage interaction between preservice teachers and university supervisors. Preservice teachers and faculty members who used the network exchanged lesson plans, discussed teaching experiences, and shared classroom management issues. The exchange of information between students practising in the field and faculty supervisors enriched both experiences.

In most research projects, participants communicated through bulletin board discussions and electronic mail. Although real time conferencing capabilities were an option on some networks, data was not collected and analyzed.

Initially, projects required organization. Equipment had to be set up. Corporate sponsors eased the cost in two studies. Preservice teachers, faculty, and others needed to be trained to use the system. Some networks included co-operating teachers and administrators. One network incorporated open discussions with parents and school age children. In three studies, a technical assistant provided additional help. Techniques such as pairing students with other students, pairing students with faculty, scheduling special interest conferences, and making on-site visits encouraged use. Network activity increased progressively and it's use was

rated positively. However, some researchers reported a decline in use after graduation.

The literature review provides a variety of perspectives on the analysis of messages and evaluation of telecommunication activities. Message maps plot links between users. These maps can be extensive for bulletin board and real time discussions. Message and user counts provided statistical data on patterns of use. Controlled experiments provided comparative analysis between traditional supervisory methods used by faculty in the field experience and technological methods. However, most studies did not reveal a method that would provide significant information about the content of the messages, and perceptions and intentions of the users.

Studies conducted at Harvard University and Simon Fraser University suggest that messages sent electronically were reflections on school experiences. The nature of the electronic medium provided a safe and non-evaluative environment. Further research needs to investigate the content of the messages and their contribution to the professional development of preservice teachers.

Computer messages between fifteen health and physical education preservice teachers and the faculty contact person were examined in this study. Discourse analysis based on the method devised by Beals (1989) was used to identify the purposes of communication and the topics for discussion. Examination of the dialogue provided some significant

information about the thoughts, concerns, and decisions of preservice teachers during the field experience.

CHAPTER III

PROCEDURES AND METHOD

Introduction

The procedures for the collection of data and the method for analyzing the communication interactions of preservice teachers and the faculty contact person are described in this chapter.

Preliminary Procedures

The sample for this study was 25 health and physical education preservice teachers enrolled at the University of Regina during the 1992 Fall Semester. In the semester before internship, participants were linked to the UNIBASE network. Each student was given a guest account. After three two-hour workshop sessions, students sent mail to the faculty contact person, engaged in electronic discussion, and posted resource materials in a special area on the network. Resource materials such as lesson plans, teaching ideas, and book, film or video reviews could be found in the Student Developed Resource Materials area on the UNIBASE network.

Before the internship semester began, procedures for data entry were reviewed in an elective August workshop. A description of the study was provided. After ethics approval, students received a letter from the researcher requesting permission to examine their interactions. Participants

were assured of confidentiality and anonymity. Twenty-four health and physical education students consented. One student in the sample refused.

Preliminary organization and set up of equipment was required. In September the interns assessed computer facilities in the school. A needs assessment was conducted by telephone and equipment was supplied as needed. A second letter mailed the last week in September provided more detail for set up and encouraged network use. Throughout the study, encouraging messages were sent by the technical assistant and the faculty contact person. Several school visits were made by the faculty contact person during the internship. A questionnaire was distributed the last week of internship. Three high users were interviewed electronically in January. See Appendix A for ethics approval, the letter of consent and the follow-up letter. The questionnaire and interview questions are also included in Appendix A.

The Participants

Each participant began the internship experience in a different setting. Nine of the 24 participants were teaching in the Regina school systems. The remaining 15 preservice teachers were teaching outside of Regina. Nine of the preservice teachers were female.

Participant activity varied in levels of frequency and intensity during the internship. Frequency level was recorded by network software programmed for this purpose. When participants executed the procedure correctly, logon time, date, and log off time were recorded. The time, date, and sender of posted messages were recorded on the bulletin board and in journal postings. The technical assistant manually captured and dated the interactive conference discussions.

Fifteen preservice teachers participated in network activities during the 16-week field experience. One subject used the system less than a minute. He was not considered a user. Seven of the network users interned in Regina; eight taught outside of Regina. Some were more committed to using the bulletin board while others preferred interactive conferencing. Six made entries in the electronic journal. Appendix B contains a Summary of System Usage by Participant.

Faculty and Staff

In addition to the preservice teachers, a faculty contact person, and a technical assistant were involved in the professional development process. Participants interacted with the faculty contact person during their course of studies at the University of Regina. The technical assistant was familar with operating the UNIBASE system and was considered staff. He was a recent

graduate of the teacher education program at the University of Regina. The data included preservice teachers, faculty, and staff interactions on the computer network.

The UNIBASE Network

Conversations on UNIBASE were conducted as posted (non-real time) or as interactive (real time) conferences. In posted conversations, participants chose when they would read and send messages. Interactive conferences happened at a scheduled time or were impromptu.

Posted entries were made in either the bulletin board or in the journal. The following directions provided by the faculty contact person acted as a guideline for bulletin board messaging.

> To: ALL
> From: Steve
> Subject: INTRODUCTION
> Date: Thu Oct 15 19:16:57 1992
>
> Hi -
>
> In order to help us get to better know and understand each other's internship situation and opportunities
> PLEASE
> Make an early entry in this area outlining what you have been doing and what you are scheduled to be doing in the near future.
>
> Also please provide us with a descriptive background regarding the school, students, school administration and staff, as well as the community in general.

Information of this type will be especially helpful when we get into "real time" conferences or "kick into" the meaningful HELP mode.

We are all looking forward to reading about your setting and "adventures."

Take Care and Enjoy!

Steve

Journal messages were an exclusive posted exchange between the preservice teacher and the faculty contact person. Each preservice teacher was individually invited to participate. The objective for the journal was clearly stated in the faculty member's first posted message:

To: ALL
From: Steve
Subject: WELCOME!
Date: Mon Oct 19 22:02:51 1992

Hi _

This is the area that we'll use for sharing reflections and specific questions regarding aspects of your internship experience. They are intended to be kept relatively private.

In this area we can discuss specific challenges and opportunities. It is also the area that will allow your faculty supervisor and I to keep up to date with what you are doing during your internship.

I am looking forward to regular and frequent participation in this area.

Take Care and Enjoy!
Steve

During internship, six preservice teachers made periodic visits to the electronic journal. Entries were longer than the postings to the bulletin board. They were more personal and contained more information.

When the preservice teachers wanted to connect to the system several communication options and service choices were available. From the Health and Wellness System Menu preservice teachers selected the Online Course Option, EFD400. EFD400 was a specific area set aside for discussions during internship. Participants could choose to enter the bulletin board discussion, post entries in the electronic journal or send personal electronic mail to specific users. They also could access the conference table for real time chatting. Resource materials from the UNIBASE electronic library were available from this menu.

To leave a message, preservice teachers would choose the area and respond to a "To:" prompt. Then they then could title the message. Once the completed message was sent to a specific individual or area, it was assigned a number for the message menu and dated. Example 1 is a list of some of the message titles posted in the Message Read Section of the bulletin board.

Example 1

Message Read Section

1 Hi 92 interns!!! (255 bytes)
2 Re: Hi 92 interns!!! (378 bytes)
3 EHE 350 text (587 bytes)
4 EHE 350 text (306 bytes)
5 Re: EHE 350 text (295 bytes)
6 ROUSING WELCOME!!!!!!!!!!(346 bytes)
7 I Have ARRIVED!!!! (318 bytes)
8 Re: EHE 350 text (136 bytes)
9 general (1333 bytes)
10 checking in (472 bytes)
11 greetings (662 bytes)
12 Conferencing
13 Starting Out

Example 2 simulates the experience of selecting and reading a message.

Example 2

Read which message? 13

To: Hello Everyone
From: Gerry
Subject: Starting Out
Date: Thu Oct 9 21:17:34 1992

Hi there! This is Regina's only Monarch checking in. I read a few of the previous entries and it is good to see that many of us are getting on line. Up to this point internship has been a lot of fun and has been quite a learning experience. I have learned many of the administrative types of duties a teacher has and some of them can be quite tedious, but generally they are not a problem. Hey it just comes with the territory. Anyway I will be talking to quite a few of you in the future and hope to exchange some ideas. To date, I have taught a mental health unit in Health and have just recently been given a grade nine Phys. Ed. also. I will be wrapping up a nutrition unit and a mini-unit on bones and muscles in the near future. In Phys. Ed. I am

> currently teaching wrestling and so far it has gone very well. Hopefully this trend will continue. If anyone has some good resources on these units, I would like to talk to you. I always am looking for new ideas to use in my class.
>
> I will talk to you all later! May your experiences turn out first and goal!
> Gerry

If one chose to answer the message the "Re:" prompt would appear. The reply was then re-posted to the bulletin board. Example 1 illustrates some "Re:" entries.

The preservice teachers used the opportunity to conference or "chat" in real time. Initiated through a bulletin board discussion, participants set a date and time to meet weekly on the system. Six conferences were scheduled and co-ordinated with the help of the technical assistant. The dialogue was saved electronically on a disk or as hard copy from every conference except the first. On two occasions (November 25 and December 2), the preservice teachers interacted with Internet users from Saskatchewan, the United States, and Manila in the Philippines. Although the preservice teachers interacted with educators, they were reluctant to share their teaching perspective in these two conferences. Therefore, dialogue from the second, third, fourth, and segments of the last conference were selected as representative.

Characteristics of Computer-Mediated Communication

Participants in computer-mediated communication adopted unusual expressives to communicate the intent of their message. The lack of a shared physical context encouraged participants to be explicit and direct. Through questioning or clarifying their position, preservice teachers in this study demonstrated assertiveness skills. The emotional content of some messages required an alternative form of expression. Sometimes *joke* or *laugh* was bracketed to clarify meaning. Each of these techniques were acceptable in network communication.

Grammatical and spelling errors were ignored. There was no evidence of apology for these errors although the computer transcripts indicated that to some extent users did try to correct their errors.

Humour in communication was an indication of familiarity and ease. On several occasions the group offered humour as support when sensitive issues were discussed. The flow in two different conversational segments suggest members of the network knew each other well.

Example 1
Renee=
I have a topic. Has anyone used behaviour contracts with evil students?
Frank=
I had to when I interned!
Sue=
oh not at all....I have complete and total control at all times

Frank=
Sure Sue!!!!!!!<laugh>
Renee=
LIE!!

Example 2
Frank=
how's life Gerry
Lloyd=
Gerry, are you there you butt pirate
Gerry=
Yes, actually I fell asleep on the couch
Frank=
well an intern can get pretty tired Gerry
Lloyd=
You lazy guy you, how many classes did you teach today?

The computer environment encouraged participants to respond assertively. This fostered a trusting environment for faculty and preservice teachers. The faculty contact person was treated as an equal but also with respect for his position as advisor.

Method

In this study each message was a unit for analysis. All messages were analyzed for function and content.

Coding categories used by Beals (1989) and Cutler (1992) for examining computer-mediated dialogue on the Beginning Teacher Computer Network were adapted for this study. The participants in this study and

those in the study on the Beginning Teacher Computer Network had similar characteristics. Both preservice teachers and the beginning teachers used a computer network to communicate while they were learning to teach. Beals researched a method to analyze computer-mediated dialogue for purpose of communication. Cutler examined messages for topic categories.

The approach used by Beals (1989) to examine computer-mediated dialogue is grounded in discourse analysis theory. Of the various studies in the literature this method was the most definitive for examining dialogue in the area of computer-mediated communication.

Cutler (1992) explored content in messages. Initially, the topic coding categories from Cutler were used to classify topics in the preservice teacher discussions. As analysis of the data progressed some topics were excluded and others added. The topics teacher/administrator relationships, teacher/teacher relationships, teacher learning, and workplace issues did not apply to the preservice teachers in this study. The topics intern, co-operating teacher, co-operating teacher/intern relations, teacher education program, and technical were added. The topic, teacher education program, included all reports related to the preservice teacher's teaching responsibilities and evaluation of practice during the internship experience.

Discourse Function Analysis

Discourse analysis focuses on the intentions of the speaker and the effects of remarks on the listener. Beals (1989) used speech act analysis to examine the network goals of speakers on the Beginning Teacher Computer Network. This method, according to Beals, "borrow(s) heavily from the classroom discourse work . . . of Sinclair and Coulthard, and Burton" (p. 19).

Hierarchical scales for analyzing speech from the smallest unit of words to larger segments of clauses, phrases, sentences, and paragraphs were developed. The "rank scale" model of Sinclair and Coulthard was used to classify levels of classroom exchanges in descending order from interaction, to transaction, to exchange, to move, to act. Turn taking is characterized by the properties of the conversational move (Sacks, Schegloff & Jefferson, 1974). It usually operates in pairs. Although units for analysis isolated by various researchers served different purposes and different criteria, they were similar in structure. Table 1.1 presents a comparison of two prominent analysis structures.

Beals chose the Sinclair and Coulthard model because it encompassed analysis at the micro level of act and move, and at the macro level of transaction around a topic. The Beals method was adopted for this study.

Table 1.1
Comparative Structure Illustrating Levels of Discourse

Sinclair & Coulthard	**Sacks, Schegloff & Jefferson**
Interaction	Conversation
Transaction	Topic
	Sequence
Exchange	Pair
Move	Turn
Act	

Method for Speech Act and Move Analysis

Speech acts are the smallest unit of analysis. Each main clause in a message was coded for act. For this study the categories of acts are adapted from Beals (1989). The act categories are:

(1) marker
(2) summons
(3) metastatement
(4) informative
(5) elicitation
(6) directive
(7) comment
(8) reply
(9) acknowledgement
(10) apology
(11) evaluation
(12) greeting
(13) closing
(14) signature
(15) expressive

Refer to Appendix C for operational definitions of the various act categcries.

Each message has a purpose. Act coding provides evidence for identifying moves within a message. The conversational move identifies the specific purpose for sending a message. Sometimes computer-mediated messages have more than one move. Categories of moves that fit the Beginning Teacher Computer Network and adopted for this study are:

(1) seeking advice (SA)
(2) offering advice (OA)
(3) seeking information (SI)
(4) offering information (OI)
(5) offering emotional support (OS)
(6) reporting experiences (coded as positive, negative, or neutral; RE+, RE-, RE=)
(7) offering humour (OH)
(8) expressing emotion (EE)
(9) evaluation (EV)
(10) eliciting discussion (ED)
(11) offering opinion (OO)
(12) challenge (C)--of another's opinion
(13) assent (A)--of another's opinion
(14) defense (D)--of one's opinion, usually following a challenge

Refer to Appendix C for operational definitions of move categories.

Patterns of moves, according to Sacks et al. (1974) are paired. For example, if one seeks advice, a probable response is to offer advice. Similarly, if one seeks information, a response to offer information is probable. The sequence of exchanges around a topic make a conversation.

Topic Analysis

After a comprehensive review of literature on topic analysis Beals (1989) defined topic as "not only content, but also the procedures to indicate

understanding of previous utterances, and to fit the current utterance with previous utterances" (p. 31). Topic analysis, according to Beals, is considered jointly with act and move function analysis. Act and move are linked to topic. Topic provides the organizing principle for conversation. For example, an exchange around a topic may begin with seeking information, followed by offering information, eliciting discussion, reporting experiences, acknowledging information received, offering support, offering humour, and a closing.

Method for Topic Analysis

The transcripts for act and move analysis were also used for topic analysis. Act and move reflect the conversational purpose or function in a message. Topic reflects the content. In this study, conversation is a string of two or more messages related to a topic. Twenty coding categories were used to analyze the UNIBASE network conversations. The topic coding categories are:

(1) adolescent development (AD)
(2) curriculum and planning (C&P)
(3) management and discipline (M&D)
(4) pedagogy (teacher beliefs) (P)
(5) personal life (PL)
(6) policy (POL)
(7) student behaviour (SB)
(8) student evaluation (SEV)
(9) school and community (S&C)
(10) school environment (SE)
(11) student learning (SL)
(12) subject matter knowledge (SMK)

(13) intern/pupil relations (I/P)
(14) student diversity (SD)
(15) teacher diversity (TD)
(16) teacher education program (TEP)
(17) intern (I)
(18) co-operating teacher (C)
(19) co-operating teacher/intern relations (C/I)
(20) technical (T)

Refer to Appendix C for operational definitions of the topic categories.

The next step in topic analysis focused on the development, elaboration, and change of topic (Beals, 1989). This step was applied to two interactive discussions in this study. The following procedure was used:

(1) The text was read to determine the flow of conversation.

(2) Chronological messages of interactive conversation were sorted according to topics.

(3) The underlying proposition was summarized in a phrase or sentence.

(4) A discourse topic (DT) was assigned to the first proposition introduced and subtopics (ST) to further references to the topic. Subtopics in an exchange could become topics in another exchange.

The last step in topic analysis was to examine computer discourse interactions for emerging communication patterns.

Descriptive Statistics

Logon Data. The UNIBASE operator used software on the system to record each participant's attempt to logon. Logon hours, time of day, and day of week were recorded and compared.

Function and Content Moves. The following frequency distributions were calculated for function and content moves. The frequency of conversational moves on the bulletin board, in selected interactive conferences, and in the electronic journal were counted as follows:

(1) Frequency of Function Moves by Preservice Teachers in each of the following: Interactive Conferences, Bulletin Board, and Journal.

(2) Frequency of Function Moves by Faculty Contact Person in each of the following: Interactive Conferences, Bulletin Board, and Journal.

(3) Frequency of Function Moves by Technical Assistant in each of the following: Interactive Conferences and Bulletin Board.

(4) Frequency of Content Moves by Preservice Teachers in each of the following: Interactive Conferences, Bulletin Board, and Journal.

(5) Frequency of Content Moves by Faculty Contact Person in each of the following: Interactive Conferences, Bulletin Board, and Journal.

(6) Frequency of Content Moves by Technical Assistant in each of the following: Interactive Conferences and Bulletin Board.

(7) List of Discussion Topics and Sub-topics (October 28, 1992)

Preservice Teacher Questionnaire. This questionnaire was used to examine the preservice teachers' perception of network use during internship. Use was measured on several rating scales. Open-ended questions were used to explore the thoughts and opinions of the preservice teachers who used the network during internship. The questionnaire was mailed to each participant at their practice teaching school two weeks before the end of internship. A stamped return envelope was supplied. The questionnaires were returned within four weeks of the end of internship. Explanations for use during internship were examined as follows:

(1) Explanation for Connect Time to the Network

(2) Explanation for Use of Time on the Network

(3) Explanation for Network Effectiveness

Interviews. Three high users were interviewed within a month following the internship experience. The partially structured interviews were conducted electronically. High use was determined by comparing the frequency of connect hours between participants. Other factors as entries in the journal area, postings to the bulletin board, and participation in real time conferences were considered in determining high usage. Information was sought on the preservice teacher's computer-mediated communication background, knowledge, experience, opinion, and feelings. Interns who did

not use computer-mediated communication during the 16-week field experience were not included in this study.

Reliability

The researcher coded all messages for act, move, and topic. Reliability was established by checking, and three months later, rechecking the assignment of codes for consistency. Researcher reliability was 96% for coding conversational moves, and 97% for coding topics.

Validity

This study involves an exploration of computer interactions between health and physical education preservice teachers and a faculty contact person at the University of Regina during the 1992 Fall Semester. The thoughts, concerns, and decisions of these preservice teachers are exclusive to this research sample. Discourse analysis used helped identify the purpose for communication and the topics of discussion. The method was adapted from two previous studies that explored the purpose and content of computer-mediated messages. Network software enabled the capture of the total electronic conversations. These conversations reflected as closely as possible the reality of the preservice teachers' experiences during internship.

Conclusion

The data collected was judged to be suitable for research on preservice teachers' thinking during the field experience. Network members started the discussions, chose the time, the electronic medium, and the topics. The interactions are a collection of ideas, experiences, reflections, and solutions expressed by teachers learning to teach.

CHAPTER IV

ANALYSIS OF DATA

The analysis and results of the data collected are presented in this chapter. Many of the findings are displayed in tables. Some messages are quoted as examples to help clarify the findings. To give a sense of time, the message header (date, time, title, sender and receiver) was included in the quotation. If sections of the message text referred to another topic or were considered irrelevent to the point, they were deleted. Typographical and spelling errors, which happen frequently in computer-mediated communication, were corrected. The preservice teachers, the faculty contact person, and the technical assistant are referred to by pseudonyms.

Function and Content Analysis of Network Communication

Introduction

In this chapter section the purposes for communication (function) and the topics for discussion (content) are analyzed. In conversations, function and content are closely related.

The analysis began with a micro examination of the dialogue for act and move. Once the purpose was identified, the message was examined at

a macro level for topic. Finally, the dialogue was examined for emerging patterns of communication.

Results and discussion are presented by research questions. The first research question was on the purposes for communication. The second research question was about the topics for conversation. The third question required an exploration of the patterns of communication that emerged.

QUESTION ONE

1. For what purposes did health and physical education preservice teachers and the faculty contact person use computer-mediated communication to interact during internship?

Discourse Function Analysis

An adaption of the scheme designed by Beals (1989) was used to analyze network messages. To begin the analysis, each message was coded for the speech act. Speech act analysis assisted in identifying the intent of the message. Speech act was not counted in this study. Next, the conversational move was identified. A conversational move denotes the specific purpose for communicating within the exchange. Sometimes a message had more than one move. Moves appeared to operate in pairs.

Turn taking was a property of the conversational move. For instance, if one seeks information, a likely response was to offer information. Therefore, in the discussion on conversational moves, responses made by others were considered.

Moves were recorded as data for purpose of communication. Messages in four real time conferences, the bulletin board, and six journals were analyzed. Table 4.1 provides a comparison of moves between participants in the bulletin board, journal, and real time conferences. Table 4.2, Table 4.3, and Table 4.4 provide frequency of function moves by the preservice teachers, the faculty contact person, and the technical assistant. See Appendix C for examples of act and move analysis.

Table 4.1
Comparison of Moves Between Participants in the Bulletin Board, Journal, and Real Time Conferences

PARTICIPANTS	BULLETIN BOARD		JOURNAL		REAL TIME CONFERENCES							
					October 28		November 9		November 18		December 2	
	f	%	f	%	f	%	f	%	f	%	f	%
Preservice Teachers	152	57.4	204	74.2	248	67.4	150	67.8	121	53.5	55	46.6
Faculty Contact Person	65	24.5	72	25.8	57	15.6	26	11.8	43	19.1	19	16.1
Technical Assistant	48	18.1			62	17.0	45	20.4	62	27.4	44	37.3
TOTAL MOVES	265	100	276	100	365	100	221	100	226	100	118	100

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Table 4.2
Frequency of Function Moves by Preservice Teachers in the Bulletin Board, Journal, and Real Time Conferences

FUNCTION MOVES	BULLETIN BOARD		JOURNAL		REAL TIME CONFERENCES							
					October 28		November 9		November 18		December 2	
	f	%	f	%	f	%	f	%	f	%	f	%
Seek Advice	8	5.3	6	2.9	7	2.8	3	2.0	3	2.5	2	3.6
Offer Advice	4	2.6	1	.5	6	2.4	5	3.3	4	3.3	3	5.5
Seek Information	7	4.6	11	5.4	29	11.8	34	22.7	7	5.8	6	10.9
Offer Information	37	24.3	85	41.6	61	24.8	29	19.3	30	24.8	23	41.8
Offer Support	14	9.2	1	.5	8	3.3	3	2.0	4	3.3	2	3.6
Report Experiences (positive) +	28	18.4	38	18.6	16	6.5	5	3.3	4	3.3	0	0
Report Experiences (neutral) =	7	4.6	12	5.9	7	2.8	4	2.7	0	0	1	1.8
Report Experiences (negative) -	10	6.6	31	15.2	19	7.7	5	3.3	3	2.5	0	0
Offer Humour	12	7.9	1	.5	13	5.3	16	10.7	13	10.7	1	1.8
Evaluation	1	.7	2	.9	3	1.2	2	1.3	4	3.3	0	0
Elicit Discussion	2	1.3	0	0	7	2.8	6	4.0	3	2.5	0	0
Offer Opinion	11	7.2	12	5.9	24	9.8	9	6.60	19	15.7	9	16.4
Challenge	0	0	1	.5	9	3.7	6	4.0	6	4.9	1	1.8
Assent	0	0	0	0	8	3.3	10	6.7	10	8.3	0	0
Defense	0	0	2	.9	5	2.0	3	2.0	4	3.3	1	1.8
Acknowledge	3	2.0	1	.5	20	8.1	5	3.3	6	4.9	4	7.3
Announce	2	1.3	0	0	2	.8	3	2.0	0	0	2	3.6
Apology	6	4.0	0	0	2	.8	2	1.3	1	.8	0	0
TOTAL MOVES	152	100	204	100	246	100	150	100	121	100	55	100

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Table 4.3
Frequency of Function Moves by Faculty Contact Person in the Bulletin Board, Journal, and Real Time Conferences

FUNCTION MOVES	BULLETIN BOARD		JOURNAL		REAL TIME CONFERENCES							
					October 28		November 9		November 18		December 2	
	f	%	f	%	f	%	f	%	f	%	f	%
Seek Advice	1	1.5	2	2.8	2	3.5	3	11.5	3	6.9	3	15.8
Offer Advice	8	12.3	6	8.5	13	22.7	6	23.1	3	6.9	0	0
Seek Information	9	13.8	21	29.6	15	26.3	8	30.7	13	30.2	6	31.5
Offer Information	11	16.9	20	28.2	8	14	3	11.5	5	11.6	5	26.3
Offer Support	18	27.7	18	25.3	4	7.0	1	3.8	3	6.9	0	0
Report Experiences +	0	0	0	0	0	0	0	0	0	0	0	0
Report Experiences =	0	0	0	0	0	0	0	0	0	0	0	0
Report Experiences -	0	0	0	0	0	0	0	0	0	0	0	0
Offer Humour	0	0	0	0	3	5.3	1	3.8	1	2.3	1	5.3
Evaluation	1	1.5	0	0	0	0	0	0	1	2.3	0	0
Elicit Discussion	2	3.1	0	0	1	1.8	0	0	1	2.3	0	0
Offer Opinion	4	6.2	2	2.8	1	1.8	3	11.5	2	4.7	0	0
Challenge	1	1.5	0	0	1	1.8	0	0	1	2.3	0	0
Assent	0	0	0	0	4	7.0	0	0	6	13.9	0	0
Defense	0	0	0	0	0	0	0	0	1	2.3	0	0
Acknowledge	10	15.4	2	2.8	2	3.5	1	3.8	3	6.9	3	15.8
Announce	0	0	0	0	0	0	0	0	0	0	1	5.3
Apology	0	0	0	0	3	5.3	0	0	0	0	0	0
TOTAL MOVES	65	100	71	100	57	100	26	100	43	100	19	100

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Table 4.4
Frequency of Function Moves by Technical Assistant in the Bulletin Board and Real Time Conferences

FUNCTION MOVES	BULLETIN BOARD		REAL TIME CONFERENCES							
			October 28		November 9		November 18		December 2	
	f	%	f	%	f	%	f	%	f	%
Seek Advice	3	6.3	0	0	1	2.2	3	4.8	3	6.8
Offer Advice	6	12.5	2	3.4	5	11.1	2	3.2	2	4.5
Seek Information	3	6.3	8	13.5	2	4.4	16	25.8	12	27.3
Offer Information	24	50.0	14	23.7	18	40.0	8	12.9	6	13.6
Offer Support	1	2.0	7	11.9	3	6.7	0	0	2	4.5
Report Experiences +	0	0	0	0	1	2.2	1	1.6	1	2.3
Report Experiences =	0	0	1	1.7	0	0	0	0	0	0
Report Experiences -	0	0	1	1.7	0	0	7	11.3	1	2.3
Offer Humour	0	0	8	13.5	2	4.4	1	1.6	3	6.8
Evaluation	0	0	1	1.7	1	2.2	2	3.2	2	4.5
Elicit Discussion	2	4.2	4	6.8	6	13.3	5	8.1	0	0
Offer Opinion	3	6.3	8	13.5	2	4.4	10	16.1	7	15.9
Challenge	0	0	0	0	0	0	1	1.6	1	2.3
Assent	0	0	1	1.7	2	4.4	3	4.8	0	0
Defense	3	6.3	0	0	0	0	0	0	0	0
Acknowledge	2	4.2	1	1.7	2	4.4	3	4.8	4	9.1
Announce	3	6.3	0	0	0	0	0	0	0	0
Apology	1	2.0	3	5.1	0	0	0	0	0	0
TOTAL MOVES	48	100	59	100	45	100	62	100	44	100

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The transcripts contained 265 moves in bulletin board entries, 276 moves in journal entries, and 930 moves in four real time conferences. The preservice teachers accounted for 57.4% of the total moves on the bulletin board, 74.2% of the total moves in the journals, and 61.5% of the total moves in the real time conferences. This suggests the preservice teachers directed the conversations. Collectively, they contributed to the exchange by initiating and developing the topics for discussion. The faculty contact person and technical assistant responded to their needs.

Twenty-four percent of the preservice teacher bulletin board moves offered information on the schooling environment. The information included time schedules, subjects taught, and the grade level.

Sometimes the preservice teachers offered information about their schooling experiences. Often the experiences were positive (18.4%). The following message is an example selected from seven similar messages:

> To: Family and friends
> From: Kevin
> Subject: Living
> Date: Sun Oct 25 15:22:01 1992
>
> Well I think I finally figured this out. . . As you are undoubtably aware this is the amazing computer wizard Kevin K. . . . Things at the Sampson Comp. are going not bad . . . My co-op only has three classes because he is athletic director. I took one of them on the first day, a grade nine p.e. His other two classes are math which I haven't done yet as I have been working with other teachers in areas more familiar to me. For my full time block I am going to take on one of his math classes along with three p.e. and a health. Yes I think I

> will be busy, fortunately I love stress. (Eustress right?) The staff here is quite large. . . . I am looking forward to seeing everyone over the two days.

Preservice teachers sought advice (5.3%). Seeking advice usually followed a concern. The following is an example:

> To: Steve
> From: Sue
> Subject: Re: Experiences and Memories
> Date: Tue Dec 15 16:06:34
>
> Hi all, . . . I have many loose ends to tie up with my P.E. and health class. We are a little behind and I have basically ran out of time. I have to get them going on a review and I am struggling with that. If there are any suggestions let me know.

The preservice teachers were looking for support by offering information and reporting on their schooling experiences. The faculty contact person was able to offer advice, information, and support. He often connected theory with practice. For instance, an exchange on the bulletin board "About School" follows.

> To: All
> From: Gerry
> Subject: About School
> Date: Thu Oct 15 21:06:12 1992
>
> Hi there! It is the mighty Monarch again.
> To fill you in . . .
>
> For the first time today I actually became ANGRY with a student. This student constantly has to irritate the person next to him and it

was becoming annoying. Everytime there was a ruckus, he would be in the middle of it. I had confronted him on previous occasions about this in a quiet and friendly manner, but this did not cure the problem. Today the behaviour was continuing while I was talking and using a very loud voice I confronted the situation . . . Anyway the behaviour stopped and I talked with the student after class .

Did I do the right thing, let me know. I am open to hearing other methods.

The faculty contact person responded.

To: Gerry
From: Steve
Subject: Re: About School
Date: Mon Oct 19 21:04:06 1992

Hi Gerry -

I can understand that the situation required a "profile" response when other approaches appeared to be quite ineffective with the disruptive student.

For me the critical aspect was that the two of you had a meaningful and valuable discussion after. What are you doing to reinforce his subsequent attentive behaviours? Please don't overlook that aspect of the learning process as well.

The preservice teachers appeared reluctant to offer advice (2.6%) openly on the bulletin board. The faculty contact person's response was the only public message that answered Gerry's request for help. However, it is possible that Gerry may have received several personal mail messages.

The preservice teachers were more willing to offer support (9.2%) than advice. Their offers of support were more than triple offers of advice. The messages appeared friendly. The following is an example:

> To: ALL
> From: Gail
> Subject: Background #2
> Date: Mon Oct 26 23:19:14 1992
>
> Hi, I am back . . .Anyways, Kevin you are not the last to get on the computer, I think I succeeded to be the last. Looks like everyone is doing well and I am sure we will all have some funny stories to tell when we meet for the internship seminar at Ed's Inn. Well of course I don't have but

In the journals preservice teachers most frequently offered information (41.6%), reported positive experiences (18.6%), and reported negative experiences (15.2%). The faculty contact person sought information (29.6%), offered information (28.2%), and offered support (25.3%).

The patterns of moves by the preservice teachers and the faculty contact person fit the journal objectives for sharing reflections and asking questions about the internship experience. In this area specific challenges and opportunities were discussed. It was also an area that allowed the faculty contact person to keep up to date with the preservice teacher's activities. The preservice teachers offered information about their experiences during the internship. The environment established by the preservice teachers and faculty contact person permitted them to discuss

both positive and negative situations. The faculty contact person responded appropriately by offering support and information. Sometimes the messages were used to schedule meetings. An example of a preservice teacher journal entry and faculty response follows.

> To: Steve
> From: Sue
> Subject:
> Date: Thu Nov 12 17:56:54 1992
>
> Hi Steve, it's been awhile since I last chatted with you . . . I finished off the basketball unit on a sort of disappointing note. By the time I got from the two days at the university my co-op finished off the basketball unit and moved forward into volleyball. I was fully planning on working some relationship oriented concepts in terms of combination drills . . . I wanted to combine the idea of teaching a basic skill while at the same time moving forward into an offensive or defensive strategy. A five man weave . . . Anyways I will leave my co-op with a few of these drills that I think might have worked for the grade 11's.

The faculty contact person responded with the following message.

> To: Sue
> From: Steve
> Subject: Re:
> Date: Wed Nov 18 13:22:22 1992
>
> Hi Sue -
>
> Those are outstanding examples of using relationships at the advanced skill level. Hope you get an opportunity to develop more of them.
>
> Will try to make a morning soon . . . Would like to find out if you have had any opportunities to develop any "flow chart" lesson plans yet.

The preservice teachers' and the faculty contact person's purposes for using computer-mediated communication varied in the real time conferences. Like the activity in the bulletin board and journal, the preservice teachers offered information on their schooling experience. Levels of frequency differed for each of the five conferences (24.8%, 19.3%, 24.8%, 41.8%). To some extent they sought information (11.8%, 22.7%, 5.8%, 10.9%). They seldom asked for (2.8%, 2%, 2.5%, 3.6%) or offered advice (2.4%, 3.3%, 3.3%, 5.5%). They were more willing to offer opinions (9.8%, 6.6%, 15.7%, 16.4%).

Except for the last two conferences, the technical assistant mainly offered information on how to use the system. He encouraged the preservice teachers to use the electronic network on the bulletin board (50%) and in each of the real time conferences (23.7%, 40%, 12.9%, 13.6%). His role as technical assistant appeared to change in the November 18 and December 2 scheduled real time conferences. Because, he was a graduate of the teacher education program, participants gave him permission to take a more active role in the discussions. In these two conferences he was either seeking information (25.8%, 27.3%) from the preservice teachers or offering opinions (16.1%, 15.9%) about his experience as an intern.

Conclusion

Exchanges on the network were guided by the roles, needs, and goals of the individuals. Messages on the UNIBASE network suggest various purposes depending on the needs of the sender. The intent of most messages by the preservice teachers was to offer information, or to report positive or negative experiences. The effect of these messages on the faculty contact person required him to offer support, offer information, or seek information. The technical assistant mostly offered information on how to use the system. However, the effects of the communication in two conferences encouraged him to offer his opinion on the topics discussed. The roles, needs, and goals of participant's shaped the electronic exchanges.

The results of discourse analysis for purpose (function) suggest that preservice teachers and a faculty contact person use the computer network as a forum for seeking and offering information.

QUESTION TWO

2. What topics were discussed by health and physical education preservice teachers and a faculty contact person during internship?

Discourse Topic Analysis

Topic analysis (content) was considered jointly with act and move analysis. The topic listing developed by Cutler (1992) was adapted for this study. The transcripts from the bulletin board, journal, and real time conferences were used for both analyses. See Appendix C for topic analysis of a message segment.

Conversations on the network revolved around a mutual topic or topics. The participants needed to understand previous messages before they could contribute to the current discussion. A discussion consisted of two or more messages on a topic. Twenty topic coding categories were used to examine the UNIBASE network conversations. See Table 4.5 and Table 4.6 for the frequency of content moves by the preservice teachers and the faculty contact person in the bulletin board, journal, and real time conferences.

Messages posted by the preservice teachers on the bulletin board (28.3%), in the journal (13.7%) and in real time conferences (12.6%, 8%, 57.9%., 50.9%) showed that conversations often were reports about teaching requirements, a condition of internship. A typical message on the bulletin board reads:

To: All
From: Renee
Subject: FIRST CHECK IN
Date: Tue Oct 20 19:41:40 1992

Table 4.5
Frequency of Content Moves by Preservice Teachers in the Bulletin Board, Journal, and Real Time Conferences

CONTENT MOVES	BULLETIN BOARD		JOURNAL		REAL TIME CONFERENCES							
					October 28		November 9		November 18		December 2	
	f	%	f	%	f	%	f	%	f	%	f	%
Curriculum & Planning	19	12.5	60	29.4	44	17.9	25	16.7	15	12.4	4	7.3
Management & Discipline	7	4.6	12	5.9	27	10.9	0	0	0	0	0	0
Pedagogy	2	1.3	26	12.7	15	6.1	1	.6	0	0	0	0
Student Evaluation	1	.7	10	4.9	6	2.4	19	12.6	0	0	0	0
Subject Matter Knowledge	1	.7	4	1.9	8	3.3	0	0	2	1.7	0	0
Intern/Pupil Relations	0	0	0	0	3	1.2	2	1.3	0	0	0	0
Student Behaviour	1	.7	1	.5	19	7.7	0	0	0	0	0	0
Student Diversity	2	1.3	3	1.5	0	0	0	0	0	0	0	0
Student Learning	0	0	6	2.9	7	2.8	0	0	0	0	0	0
Adolescent Development	0	0	1	.5	7	2.8	2	1.3	0	0	0	0
School Environment	10	6.6	8	3.9	12	4.9	5	3.3	1	.8	0	0
School & Community	0	0	0	0	2	.8	0	0	0	0	0	0
Teacher Diversity	3	1.9	2	.9	0	0	1	.6	0	0	0	0
Policy	0	0	0	0	1	.4	0	0	4	3.3	0	0
Teacher Education Program	43	28.3	28	13.7	31	12.6	12	8.0	70	57.9	28	50.9
Intern	13	8.6	23	11.3	5	2.0	11	7.3	11	9.1	1	1.8
Co-operating Teacher	2	1.3	3	1.5	0	0	0	0	0	0	1	1.8
Co-op/Intern Relations	2	1.3	6	2.9	5	2.0	2	1.3	0	0	0	0
Personal Life	12	7.9	1	.5	31	12.6	17	11.3	17	.1	8	14.5
Technical	34	22.4	10	4.9	23	9.3	53	35.3	1	.8	13	23.6
TOTAL MOVES	152	100	204	100	246	100	150	100	121	100	55	100

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Table 4.6
Frequency of Content Moves by the Faculty Contact Person in the Bulletin Board, Journal, and Real Time Conferences

CONTENT MOVES	BULLETIN BOARD		JOURNAL		REAL TIME CONFERENCES							
					October 28		November 9		November 18		December 2	
	f	%	f	%	f	%	f	%	f	%	f	%
Curriculum & Planning	7	10.8	19	26.8	20	35.1	15	57.7	9	20.9	0	0
Management & Discipline	0	0	1	1.4	3	5.3	0	0	0	0	0	0
Pedagogy	5	7.7	3	4.2	4	7.0	0	0	0	0	0	0
Student Evaluation	1	1.5	0	0	2	3.5	2	7.7	0	0	0	0
Subject Matter Knowledge	5	7.7	0	0	3	5.3	0	0	0	0	0	0
Intern/Pupil Relations	0	0	0	0	0	0	0	0	0	0	0	0
Student Behaviour	0	0	0	0	1	1.8	0	0	0	0	0	0
Student Diversity	0	0	0	0	0	0	0	0	0	0	0	0
Student Learning	1	1.5	5	7.0	4	7.0	0	0	0	0	0	0
Adolescent Development	0	0	0	0	2	3.5	0	0	0	0	0	0
School Environment	3	4.6	2	2.8	1	1.8	2	7.7	0	0	0	0
School & Community	0	0	0	0	0	0	0	0	0	0	0	0
Teacher Diversity	0	0	0	0	0	0	0	0	0	0	0	0
Policy	0	0	0	0	0	0	0	0	6	13.9	0	0
Teacher Education	25	38.5	25	35.2	5	8.8	0	0	27	62.8	7	36.8
Intern	0	0	0	0	0	0	0	0	0	0	0	0
Co-operating Teacher	0	0	5	7.0	0	0	0	0	0	0	0	0
Co-op/Intern Relations	0	0	0	0	0	0	0	0	0	0	0	0
Personal Life	2	3.1	2	2.8	7	12.3	1	3.8	0	0	3	15.8
Technical	16	24.6	9	12.7	5	8.8	6	23.0	1	2.3	7	36.8
TOTAL MOVES	65	100	71	100	26	100	43	100	43	100	19	100

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> Hello Everyone! . . . I have spent time teaching period two to a grade nine class. As of now I am beginning my third class, period 4 grade twelve P.E. (Weight Training). . . . I will be taking on four classes for three weeks, five classes for one week and four classes for a final week. In total, I will teach a full load for five weeks. During those five weeks, I will get a chance to work in health, english and perhaps math and physics.

The writer went on to describe the school environment and how the intern felt about working in the school. Eight of the 15 preservice teachers made similar comments. From the above message the preservice teacher continues:

> Valleyview is a great school to intern at. The staff and administration are fairly young and receptive to new ideas and understanding the fact that interns aren't perfect. It certainly takes some pressure off. All in all things are going very well.

The preservice teachers referred to the school environment in bulletin board reports (6.6%), journal entries (3.9%), and in three of four real time conferences (4.9%, 3.3%, .8%, 0%). The preservice teachers made more references to the school environment in the October 28 conference than at any other time. These early descriptions set the context for their schooling experience. Others used these descriptions as reference points to which they could relate. Preservice teachers reported that they had supportive staff in the school. There was little discussion about the co-operating teacher or about the co-operating teacher/intern relationship. Comments

that were made about co-operating teachers were positive. One bulletin board reflection showed that the preservice teachers observed staff behaviours and examined how professionals cope with differences in the workplace.

> To: Start out 2
> From: Gerry
> Subject: About School
> Date: Thur Oct 15 21:06:12 1992
>
> Hi there! It is the mighty Monarch again.
>
> To fill you in on the school a bit more--it has a brand new principal and vice principal, so everyone is getting used to the new administration and so far it is going quite well. I detect some differences between certain staff members, but as a whole, everyone gets along very well with each other. If there are differences between staff members, everyone discusses them in a very professional manner.

The preservice teachers held a high regard for professionalism in the work place. Observed teacher behaviours were shared and filed as practical knowledge in building the preservice teacher's concept of what schools do.

Other reflections indicated preservice teachers had to learn to perform other tasks and accommodate interruptions. One preservice teacher stated he learned various types of administrative duties. These were tedious but necessary. On occassions following holidays or other scheduled interruptions, preservice teachers reported that short work weeks interferred with their teaching plans. The following journal entry illustrates this point.

To: Steve
From: Sue
Subject: events
Date: Sun Oct 25 18:35:53 1992

This coming week is going to be very broken up for me and the classes (that I) teach because of our meeting, an assembly on Thursday and a shortened day on Monday for the monthly staff meeting. It will be interesting how this effects the flow of my unit and what I have to do to "catch them up"

In a journal reflection shortly after, this preservice teacher indicated how she coped with interruptions.

To: ALL
From: Sue
Subject:
Date: Thu Nov 12 17: 56:54 1992

. . . As for other news, I have finally got myself back together since having so many interruptions. I really find them disruptive and would like to cut them in half. For the remainder of the semester I miss very little so that is much better for all involved.

The preservice teachers appeared to have the students' learning at heart during their internship. Workplace interruptions appeared to affect plans. However, messages indicate that preservice teachers learn to cope. Some coping behaviours were communicated among the preservice teachers. As the preservice teachers evaluated experiences, ethics was a professional development consideration.

Besides giving reports on teaching responsibilities (Teacher Edcuation Program), preservice teachers shared curriculum development plans on the bulletin board (12.5%), in the journals (29.4%), and in the real time conferences (17.9%, 16.7%, 12.4%, 7.3%). The following segment is typical of bulletin board messages:

> To: ALL
> From: Gail
> Subject: background
> Date: Mon Oct 26 26:59:42 1992
>
> Hi, I'm here and I'm surviving. I am at . . . I started with a grade ten class of my own with both boys and girls. I've done tennis, badminton, 5 pin bowling, pickle ball, curling, circuit training, and recreational and cooperative games. So if you need my expertise in any of these topics, please let me know and I will be glad to help.
>
> Gail

Journal entries provided more detail than the bulletin board entries. The trusting and professional relationship between the faculty contact person and the intern allowed the preservice teachers freedom to describe learning concepts. A segment of a journal entry follows:

> To: All
> From: Sue
> Subject:
> Date: Thu Nov 12 17:56: 54 1992
>
> Hi Steve, . . . I did mention that I have had a chance to work in some relationship type things into my teachings. For example in this unit on volleyball/walleyball I have touched on the idea that when playing walleyball there are a lot more defensive strategies to consider, and

> they are much like the ones used in regular volleyball. For example, when lining one's body up to block someone as well as lining up in the back row to dig up a hit one has to quickly assess the angles and the most likely place the ball will come down from. Playing the ball off the rebound for a serve or almost any hit, you really have to anticipate the angles and line yourself up accordingly. Also the the communication and the court awareness that takes place in walleyball reflects the same type of communication and spatial awareness needed in regular volleyball. These are just two examples of relational concepts I have attempted to incorporate.

Participant topics for computer-mediated communication varied across the internship. The most frequently discussed topics by preservice teachers in the October 28 conference were curriculum and planning (17.9%), personal life (12.6%) and the teacher education program (12.6%). About two weeks later (November 9), the topics changed. They included technical (35.4%), curriculum and planning (16.7%), student evaluation (12.6%), and personal life (11.3%).

In the November 9 conference initial topic exchanges were about technical aspects of network operation. Once the technical problems were resolved, preservice teachers once again discussed curriculum and planning issues.

Discussions in one conference (November 9) reflected dilemmas in student evaluation (12.6%). This topic was a particular concern in the November 9 conference. It was not addressed in succeeding conferences. The change in topics from curriculum and planning to student evaluation

appears to be related to what was taking place in the schools at the time.

The following is an excerpt:

> Gerry=
> I used a group evaluation similar to G.H. where the students evaluate each other. Are there other ways to evaluate other than group evaluation. I have a great deal of marking. Suggestions????
> Lloyd=
> I made a subjective evaluation today where I have everyone's name and a row of numbers from one to ten . . . I evaluate their attitude and participation. If they come dressed, they get a maximum of five, if they act up or don't show sportsmanship, they loose marks.
> Renee=
> I recently gave an assignment to a class where they had to design a weight training assignment for a specific individual (4 cases). I set out fairly specific guidelines and from what I've seen, students have done fairly well with some exceptions.
> Marv=
> Lloyd - I would use that with my students but most of them don't care about marks.
> Steve=
> Perhaps consider criteria they have established for their own improvement
> Steve=
> That is more of a How Am I progressing in the direction that I want to go.

In the next two conferences (November 18 and December 2) the focus on lesson topics changed from curriculum planning and student evaluation to the preservice teachers' performance evaluation. These discussions are both logical and timely. Near the end of internship preservice teachers are evaluated on the effectiveness of their teaching practice. Aspects of the Intern Professional Profile (57.9%, 50.9%) were discussed. The preservice teachers wanted the evaluation to reflect as accurately as possible their

perceptions of their teaching performance. The change in topics from students and teaching (October 28, November 9) to preservice teacher performance (November 18, December 2) suggests conversations reflect the foremost thoughts and concerns of the preservice teachers.

Four categories for examining preservice teachers' responses to students were used. These were student learning, student behaviour, student diversity, and adolescent development. These topics were seldom discussed by preservice teachers on the bulletin board or in the journal. However, student behaviour (7.7%) was a topic in one interactive conference. A segment of the October 28 conference appears below.

> Steve=
> Kevin - What appears to be the major concerns regarding student behaviours at the Comp in T---?
> Kevin=
> It is strange but the toughest kids are grade 9's probably half a dozen have gotten suspensions already.
> Frank=
> Kevin - I think it has a lot to do with individual classes . . . some are good . . . some are bad.
> Kevin=
> seriously, it isn't the classes, there are some wicked 9's, one threatened he would get the principal sometime on the street. This was face to face alone in the office.
> Frank=
> Kevin - ya . . . it can be a real adventure these days!!!! WE really have to watch our backs!!!!!
> Gerry=
> We have a ton of bad grade nines at M---.
> Steve=
> Have any of you heard any "suggestions" as to why grade nines appear to have adjustment problems????

As the preservice teachers probed this issue, several resolutions were brought forward and examined. The faculty contact person used opportunities in the conversation to initiate and guide the discussion. Preservice teachers reported experiences from the school environment, examined the issues, and offered solutions. Communication was dynamic. Responses by the participants were multiple, instant, and varied.

The preservice teachers' anxiety and frustration in working with difficult students was apparent. The sense of helplessness and hopelessness was expressed in the following ways in a real time conference:

> *I think they feel teachers cannot do anything to them (misbehaving students) and they can get away with what they want.*
>
> *The students are really getting out of hand.*
>
> *It could be because they have been pushed through school, home life*

The faculty contact person offered relief by suggesting a case study of incidents or situations that were potential problems for the teacher or the school for the post internship seminar class. In this regard, the semester after internship at the University of Regina extends professional development.

Four references were made to management and discipline issues (4.6%). An example of a bulletin board report reads:

To: Start out 2
From: Gerry
Subject: About School
Date: Thu Oct 15 21:06:12 1992

Hi there! . . . Generally classroom control has not been a problem, but I quickly learnd that policies for the class have to be set out and constantly reinforced. Ie. Going to washroom or the water fountain. Also, at least two students per class/per day come to the Phys. Ed. office before class to tell myself or my co-op that they cannot participate in class.

Management and discipline topics usually evolved into curriculum and planning discussions. A preservice teacher would initiate a discussion by stating a problem. The discussion that evolved generally focussed on an exchange of teaching ideas.

The preservice teachers made more pedagogical statements in the journals (12.7%) than in the bulletin board (1.3%) or in the real time conferences (6.1%, .6%, 0%, 0%). Examples of pedagogical statements in one journal entry were:

To: Steve
From: Gerry
Subject: Unit #1
Date: Sun Nov 22 22:33:24 1992

I decided to start the year off by doing a mental health unit . . . It was difficult at first because I seemed to only be lecturing to the students everyday and I felt that I was losing their interest somewhat. I tried to alleviate this by introducing group work and this indeed did help . . . I thought a mini unit on stress would grab the students interest as there were many different things to do with the topic. The students interest level seemed to improve once again . . . My first problem I

> found was that the students were weak in coming up with ideas of their own . . . For the next unit, I will use lower level questioning techniques and will not ask so much of the students. I will make sure that the students have a FIRM knowledge base before I start to ask them higher level questions.

Pedagogical statements were reflections about the preservice teacher's practice. These statements usually followed a report of an experience, either positive or negative. Students were at the centre of the preservice teachers' concerns.

Most preservice teachers considered that the quality of instruction affected the students' ability to learn. Based on a personal evaluation of teaching effectiveness, a decision to refine teaching practice was made.

Conclusion

Messages on the bulletin board were informative. Preservice teachers frequently discussed lesson topics, the school, staff relationships, and workload responsibilities. This information provided an opportunity for preservice teachers to relate to one another. They rarely discussed students or their interactions with the students on the bulletin board.

Preservice teachers reported teaching practices. More pedagogical statements were made in the journal than in other discussion forums. Here, the preservice teachers provided details of their instruction and reflected on

it's impact. The time used to compose and send messages allowed individuals to reflect on a lesson topic or topics.

Interactive conferences revealed the foremost thoughts, concerns, and decisions of the preservice teachers. Reflection in this forum was immediate. The discussions were dynamic, real, and vigorous.

Role of Faculty

The faculty contact person responded to the needs of the preservice teachers. The most frequent responses in the bulletin board (38.5%) and in the journal (35.2%) acknowledged the work the preservice teachers were doing in the school. Often comments on the bulletin board read:

> To: Kevin
> From: Steve
> Subject: Re: Living
> Date: Wed Oct 28 22:24:39 1992
>
> Good to see that you have been able to join us. As you can tell, you're not the last. Thanx for the outline of your responsibilities and setting. It will prove to be helpful for our discussions. I liked the joke! I would like your permission to use it in some of my presentations. Thanx!

Many faculty content moves were related to curriculum and planning concerns. Often the faculty contact person would bring theory and practice together by questioning, probing, and supporting the efforts of the preservice teachers. The following is a bulletin board example:

To: Gail
From: Steve
Subject: Re: Background
Date: Wed Oct 28 22:31:48 1992

Hi Gail - Thanx for the information.
Question - If you have addressed all of those topics in the health classes I assume that the Teacher Handbook and perhaps even the Health Action Model are not being used/followed . . . Is this assumption accurate???? I would like to know from others the extent that the Health Action Model is being used in your school. Also is the Teacher Handbook being used? Looking forward to receiving that information.

A curriculum and planning response to a preservice teacher journal entry was:

To: ALL
From: Steve
Subject: Observations re: Health Education Unit
Date: Dec 9 17:11:50

Hi Sue -
Would you please indicate some of the example situations that your students identified as potential risk situations for them? Did they identify sources of risk at all? What appear to be the most common drugs for them?

Thanx for your input at today's meeting. It was very helpful. Keep up the good work!!

The faculty role remained the same in the real time conferences. However, the format of real time conferences required a different approach. The following is an example of a real time conference interaction around a curriculum and planning concern:

Lloyd=
Steve, the only problem is the one you guys identified eons ago, health education doesn't get enough exposure and the only way that I am expressing my health background is in my Wellness 11 and 12 but the grade seven and nine classes are short changed in the area of health. Not so much the grade sevens.
Steve=
OK we can't get more time for health education during the regular classes. What about out of school possibilities?
Lloyd=
In response to your last question out of class possibilities are rare because most of the them go straight home and have work to do.
Steve=
OK, What about starting a fitness club. Is there any possibility there?
Lloyd=
A fitness club is a possibility, a definite possibility.
Steve=
Would you have a section of the noon hour (2 or 3 times a week)?
Steve=
Because with a fitness and strength development club you could bring in nutrition as well.
Lloyd=
I hate to be negative Steve, but noon hours would not go over well with the students as noon hour has previously been associated with detention and most of the students go home or uptown at noon
Lloyd=
The fitness and strength development club sounds like something I might try
Steve=
I am scrambling but how about recess videos to see who you might hook?
Steve=
Then get them involved in trying to find some available time. Your money in the bank if they suggest a portion of some noon hours.
Lloyd=
I will review your ideas and with creativity, I may attempt to get some sort of fitness program going before school
Steve=
Title will be KEY!!! How would strength and shaping go over as a title???
Lloyd=
Not bad, I definitely need some sort of hook to get them involved.

Reflections in the real time conferences were dynamic. Preservice teachers were actively engaged in conversation that was practical, powerful, and real. They shared common concerns. Together, the faculty contact person and preservice teachers searched for solutions. As they shared this discovery the preservice teachers informed the faculty member about conditions in the school. Thus, practice informed theory. Curriculum development for both the preservice teachers and the faculty contact person was enriched.

Conclusion

Conversations on the network were organized around a mutual topic or topics. The discussions provided a record of the thoughts, ideas, and concerns of a group of preservice teachers during internship. The topics reflected the foremost thoughts of the preservice teachers.

The goals of the teacher education program were reflected in conversations. Topic moves by preservice teachers included reports on workload responsibilities. Some reports included curriculum development plans. Preservice teachers reflected about teaching practice in the journal.

The faculty contact person responded to the needs of the preservice teachers. Curriculum and planning topics were discussed most frequently. The faculty member's response often brought theory into practice but practice also informed theory as preservice teachers discussed conditions in

the school. Topic analysis suggested that the network is used by preservice teachers and the faculty contact person to share curriculum and planning ideas.

QUESTION THREE

3. What patterns of communication emerged in computer-mediated discussions by health and physical education preservice teachers and the faculty contact person during internship?

Combined Analysis

A combined analysis of function and content was used to examine topic initiation, elaboration, and change. Each move was assigned a topic code. When a related idea was introduced, the sequence was marked and coded as a subtopic. Sometimes the subtopic became a new topic. The topic moves were examined for patterns in discourse. Two interactive conferences were examined. Similar patterns of discourse appeared in both. Table 4.7 lists discussion topics and subtopics in the October 28, 1992 conference.

The most frequently addressed topics in the October 28 real time conference were behaviour contracts with disruptive students, Hellison's

Continuum of Social Responsibility, student behaviours, and the Wellness program. References to personal life and plans to meet during Recall Days were also popular topics.

The main topic of the discussion was how to use behaviour contracts with misbehaving students. Three other topics were initiated before the discussion focused on this topic. The other topics were personal life references, technical problems, and the discussion of topic suggestions.

The management and discipline issue that initiated the behaviour contract discussion turned into a solution seeking exercise. The discipline problem topic became a curriculum and planning concern as the preservice teachers and faculty contact person linked theory with practice. The following is an example:

> Steve=
> Renee - Do you have the opportunity to do anything with the Hellison Continuum?
> Renee=
> Are you referring to the problem student?
> Steve=
> Yes, because I think that you need a frame of reference to allow/entice him to assume some responsibility for his own behaviour. He may not have any framework for improvement.
> Kevin=
> I'm trying Hellison's as a marking/self-evaluation in two classes
> Sue=
> Gail has been implementing Hellison's in her class and she's finding it very useful.

Table 4.7
List of Discussion Topics and Subtopics (October 28, 1992)

Discussion Topics and Sub-Topics	Frequency
DT1: looking forward to recall days	4
ST1.1 rumour - party at Mary's	16
DT2: seeking topics related to internship	6
ST2.1 extra curricular activites	5
ST2.2 reporting other internship experiences	8
DT3: figuring out the electronic system	11
ST3.1 using capital letters	2
ST3.2 name in lights	2
ST3.3 topic suggestions	2
DT4: behaviour contracts with disruptive students	11
ST4.1 reporting student behaviour	12
ST4.2 standards and situation	2
ST4.3 fail because of attitude	2
DT5: Suggestions for improving behaviour	10
ST5.1 Hellison continuum	13
ST5.1.1 attitude participation	6
ST5.1.2 evaluation	10
ST5.2 use motivating activities	10
ST5.3 use anecdotal records	15
ST5.4 use report card	2
ST5.5 student's age and grade	2
ST5.6 working car analogy	6
ST5.7 develop positive profile	8
ST5.8 assign peer supervisor	1
ST5.9 stop the class	3
ST5.10 kid is beyond me	6
ST5.11 preparation to do	2
DT6: save conversation electronically	12
DT7: opinion on co-operating teacher	5
DT8: Does Teresa know about conference?	1
DT9: respond with short sentences	6
DT10: Steve has a Coke!	4
DT11: Stories, anyone?	1
DT12: Hellison levels for student evaluation	18
DT13: Teaching classes outside of specialization	12
DT14: Kim Dumont	4
DT15: Student behaviours	9
ST15.1 explanations	17
ST15.2 review file as solution	7
ST15.3 at risk program	1
ST15.4 case study examples	5
DT16: Grade 10 Wellness program	22
ST16.1 sport or health?	22
DT17: relationship dating materials	5
DT18: messages - going to Whitewood	9
DT19: stories	1
DT20: preference for particular type of conference	9
DT21: volleyball teaching materials	20

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The list of October 28, 1992 discussion topics and subtopics demonstrates how the initial topic, behaviour contracts, were elaborated and changed. Twenty-nine moves in the discussion on student behaviour were related to the Hellison Continuum. Suggestions for improving student behaviour, besides the Hellison Continuum, included the use of motivating activities, keeping anecdotal records, and entering a poor evaluation in the report card so parents could deal with the issue. As the preservice teachers examined ideas, solutions such as developing a positive profile and assigning a peer supervisor were posed. Both subtopics, the Hellison Continuum and student behaviours, were addressed again in this conference.

The network provided two formats for the preservice teachers to discuss concerns. Participants could post messages to the bulletin board or journal, or they could join a real time conference.

Messages on the bulletin board and in journal entries frequently tended to be reflective. The following is a bulletin board example:

> To: ALL
> From: Sue
> Subject: general
> Date: Wed Oct 7 18:00:24 1992
>
> . . . I have also been experiencing some observations of other classes such as English 20 and 30. In fact I was feeling quite like a chicken the other day when I got asked if I would be interested in doing a unit in this. I questioned myself when I flatly said no but at

> the same time I don't think you should get in above your head . . . I feel as though I did the right thing . . . any comments?

The following journal entry demonstrates a similar structure in the reflective process.

> To: Steve
> From: Gerry
> Subject: Unit #1
> Date: Sun Nov 22 22:33:24 1992
>
> I decided to start off the year by doing a mental health unit. This unit was to focus on self-concept and self-esteem. It was a struggle at first because I had never taught this subject matter before and my resources were very limited. Since I was somewhat strapped, I decided to ask some of the other teachers if they had some materials . . . I soon found out that it was up to me to find as many resources as possible on my own.

Preservice teachers used the bulletin board and the journal to reflect on concerns. The process was characterized by three phases. First, the teaching or schooling context was defined. This was followed by a description of a problem. Finally, a solution was saught. Often preservice teachers were looking for validation or confirmation of their actions. The reflective process of writing or communicating seemed to assist in resolving the problem.

Problem-solving and reflection in real time developed a different structure. Usually the preservice teachers initiated dialogue by seeking a common topic. Some negotiation occurred before a topic was selected.

The topic, once determined, usually included a request for help. Participants in the conversation contributed to the solution. Usually, several opinions and suggestions were offered. The involvement of the faculty contact person appeared to affect the quality of the discussion. Often he probed the preservice teachers' suggestions by asking questions and offering advice. The following are two examples of probing and questioning by the faculty contact person.

> "Renee - What would happen if you "put the ball" in the student's court? Ask him what has to be done to get to the involvement level."
>
> "Kevin - Consider monitoring your randomness so you aren't accidently overlooking someone."

The preservice teachers willingly offered solutions to shared concerns. Personal and practical knowledge about teaching were enhanced through sharing and expression. Since there was no best answer, the initiator had to evaluate and choose the most desirable outcome. Often, a participant would leave the network without a commitment but grateful for the opportunity to have shared. The following is a closing message.

> Sorry everyone, I have much work to finish so I must leave you. Thanks for your help. See all of you Monday. It was nice having so many in the conference.

Real time conferences on the network provided an opportunity for the preservice teachers to air immediate concerns. The frequency and

sequence of messages depended on the number of participants in the conference. The time taken to produce and send a message created a lag. This lag time provided an opportunity for participants to reflect on messages, organize thoughts, and respond. Journaling was dynamic because numerous solutions were offered. The interaction was active. Ideas generated were multiple, instant, and varied. Preservice teachers who engaged in conversations about teaching seemed to construct a broad personal theory on learning to teach. This is similar to the findings of Cutler (1992).

Conclusion

The preservice teachers did more than just exchange information. They shared ideas, feelings, and needs. They stated concerns. Discussions appeared to follow a pattern of initiation, elaboration, and change. Information was shared and solutions were offered. The faculty contact person offered information and advice.

Computer communication fostered reflection on teaching experiences. Class loads, teaching strategies, lesson plans, and student behaviour facilitated topics for discussion by reflecting on experiences. Messages on the bulletin board and in the preservice teachers' journals were informative. Usually a number of topics were addressed. The time factor in computer-

mediated communication allowed individuals to organize thoughts before responding. Those who chose to meet on the network at a scheduled time reflected on immediate experiences.

The act of writing and communicating facilitated problem-solving. Bulletin board and journal entries reflected a sense of conviction. Preservice teachers could mull over the problem. Posted reflections included a kind of resolution that needed validation of their belief they were right. Reflections in real time conferences were more dynamic. Participants provided multiple ideas for problem resolution. The varied teaching contexts and experiences contributed to the development of a broader perspective on schooling for the preservice teachers. Patterns of communication that emerged on the network fostered reflection and provided opportunities for problem-solving.

Questionnaire

A questionnaire was used to examine the preservice teachers' perceptions of network effectiveness during internship. It was mailed two weeks before the end of the field experience to each of the preservice teachers. Eighty percent of the questionnaires were returned. Fifteen preservice teachers stated they used the computer to communicate during the field experience, five did not use it, and five did not respond.

Thirty-seven percent of respondents tried to connect but were almost always too busy with lesson preparations. Sixty-nine percent of the respondents found the line busy at times; 81% could not make a connection for an unknown reason at times. Respondents were not afraid of being evaluated when they connected to the network.

Eleven of the 15 respondents used personal computers from home. Three reported the computer hardware they used was located in the school. This suggests that preservice teachers were most likely to own or have a personal computer in their home. Schools seem to have limited resources for telecommunication activity.

Of the total time spent on the network, respondents said they spent 36.2% of their time sending electronic mail, 25.6% reading or sending messages in the bulletin board, and 9.1% participating in scheduled conferences. Seven of the 15 users spent 4.6% of their time searching in the electronic library. Other uses of time were in the journal (8.8%) and in impromptu conferences (3.4%). Twelve percent of time could not be accounted for.

The participants were asked to rate the use of the network in one of the questionnaire items. From a list of explanations for using the network, participants selected five. Each of the five explanations were rated on a

scale from 1 (least important) to 5 (most important). See Table 4.8 for the mean score ranking for network usefulness.

Table 4.8
Mean Score Ranking of Network Usefulness
(n=14)

Explanations for Network Usefulness	f	M	SD
exchanging teaching techniques	13	3.92	1
assisting with lesson and curriculum planning	11	3.18	1.5
keeping in touch with friends	9	3.1	2
increase reflection on critical events	4	3	1.8
giving moral and emotional support	8	2.87	1.6
reflecting on philosophy of education	6	2.83	0.8
assisting with classroom management issues	6	2.66	1.2
increase communication with faculty member	7	2.57	1.8
providing a broader perspective on educational issues	8	2.5	0.9

In this study the preservice teachers' explanation for using a computer network when learning to teach differs from the teachers on the Beginning Teacher Computer Network (BTCN) at Harvard. Beginning teachers used the system first, to receive moral support and last to get help with lesson and curricular planning (Beals, 1989). The need for moral support, according to Merseth, Beals and Cutler (1992) is closely linked with the network's statement of purpose. The Harvard program "seeks to enhance, support, and extend on-the-job teacher training." UNIBASE is

recognized as a network of information resources. Although teachers differed in rank by mean scores for network effectiveness, both studies found that the network fostered conversations.

Computer networks often are vehicles for exchanging information. Preservice teachers in this study used the network to exchange teaching techniques and assist each other with lesson and curriculum planning. They agreed that the network was useful for keeping in touch with friends.

One preservice teacher said the system did not help him learn to teach. He stated,

> *It gave me a chance to consult with my peers which I consider a valuable resource. Considering our respective locations, the communication was excellent but as far as learning to teach, I don't think it helped. By the time we reach this point, our career experience will help us learn to teach not this system.*

While the literature promotes the importance of reflective teaching, respondents did not mention this perception. Nevertheless, they did reflect on what they taught, their practices, and the students. Computer-mediated communication provided a forum for reflection.

> *The main reason was discussing specific scenarios and lessons with other interns in my specific area which enabled insight into new ideas and new teaching ideas. It allowed me access to information that would have taken up valuable time, but didn't because I was able to have the info through the computer.*

> *We discussed different situations among our colleagues. We could try techniques someone else used previously. I also could mention*

my daily problems, in my journal anytime. This allowed me to talk to my advisor and feel better. My advisor could then leave info for me.

If anything it helped me maintain my stress level, i.e. hearing other suggestions, success and failures. I also received ideas on several new teaching strategies or games when I sent out a request to my fellow educators. The conferencing was also good most of the time.

Reflection through computer-mediated communication can be called "dynamic journaling." Preservice teachers used the network to share and reflect about their teaching practices by communicating with one another. Conversations were dynamic. Interactions were powerful, vigorous, and real.

Interviews

Three high users in the data of logon activity responded to a partially structured interview. Interview questions focused on participants' computer background, knowledge, experiences, opinions, and feelings about using computer-mediated communication during the field experience.

Each participant who was interviewed was introduced to computer-mediated communication before the study. They said word processing, keyboarding, and experimenting with the computer system enhanced understanding of the network. Advice to prepare others for a similar experience was offered.

> *I think the students would need to understand basic computer skills. The students wouldn't have to take any courses in computer science. I do not think using the system is very difficult. I believe some people may just be intimidated.*
>
> *[I think] being able to access the instructional materials section and at least getting hard copy of those materials, being able to participate in a conference, and posting bulletins [are necessary skills].*

Two of the three participants suggested introducing computer skills in the second year of the teacher education program. Downloading information from the library was a difficult but necessary skill. Keyboarding and word processing require practice.

Interviewees agreed that a system like UNIBASE could enhance their professional training after graduation.

> *There is no doubt that I would be interested in maintaining a link with my colleagues and professors during my first year of teaching. There are a couple of reasons. One, I would like to get suggestions from both groups on how to improve my teaching style. Secondly, I would like to know how my colleagues are doing and if there is anything I could do to help them.*

Most frequently stated uses of the network were, (1) keeping in contact with peers and their progress, (2) exchanging teaching ideas, and (3) seeking advice from the faculty contact person.

Summary Discussion

Patterns of participation on the network were complicated and interrelated. The most obvious factor affecting patterns of participation was the availability of time. Preservice teachers in this study were committed to learning to teach. Some chose to check onto the system, read and send messages, and organize and participate in regular, scheduled, real time conferences. The conversations appeared to be vital for the people who were learning to teach.

Discourse analysis was used to examine communication patterns between preservice teachers and the faculty contact person. This analysis of the dialogue was carried out to discover the purposes of communication and the topics discussed. A combined analysis was used to examine the patterns of communication that emerged.

The first research question was about the purposes for communication. Exchanges on the network appeared to be guided by the roles, needs, and goals of the individuals. The intent of most messages by the preservice teachers was to offer information. The effect on the faculty contact person was for him to offer support or to offer or seek information. Most often, the technical assistant offered information on how to use the system. Discourse analysis revealed that preservice teachers and the faculty contact person used a computer network as a way to seek and offer information.

The second research question was about the topics discussed. Objectives of the teacher education program were identified in these conversations. Topic moves by preservice teachers included reports on teaching responsibilities and experiences. The journal was used to reflect about teaching practice.

The faculty contact person responded to the needs of preservice teachers. Curriculum and planning was the most frequently discussed topic. The faculty contact person's response often surfaced theory about practice. He tended to draw upon the field experiences of the preservice teachers when attempting to expand their knowledge of relevant theory.

Computer networks are often characterized as vehicles to exchange information. Findings from the questionnaire results indicate that preservice teachers found the network helpful for exchanging teaching techniques and assisting with lesson and curriculum planning. Topic analysis revealed that the network was used by preservice teachers and the faculty contact person to share curriculum and planning ideas.

Preservice teachers did more than just exchange information. They shared concerns and offered solutions. The third question was about emerging patterns of communication. Conversations provided multiple perspectives. The varied nature of the teaching contexts and experiences contributed to the development of a broader perspective of schooling for

preservice teachers. Network conversations included evidence that the network fostered reflection on practice and provided opportunities for problem-solving.

Reflection through computer-mediated communication can be called "dynamic journaling." Preservice teachers used the network to share and reflect about their teaching practices. Journal entries were vigorous and real. Most agreed that a system like UNIBASE can enhance professional development after graduation.

Two approaches to reflection were identified. Some preservice teachers reflected on their practice in the electronic journal. Here, they interpreted the effects of their instruction. They self-analyzed their practice and modified their approach to teaching. The faculty contact person provided support.

The second approach to reflection was more dynamic. In real time conferences, preservice teachers described their schooling experiences. Discussions surfaced mutual and immediate concerns about their teaching practice. Responses were multiple, instant, and varied. As discussions developed, various possibilities, perspectives, and attitudes were evaluated. Problem-solving tended to become collaborative. This is consistent with the findings reported by Waugh et al. (1988) and Schrum (1991).

Use of the electronic medium provided time to reflect about a topic. Posted messages often contained more than one topic. Topics in real time conferences normally followed a cycle of initiation, elaboration, and change. Sometimes a topic resurfaced in a discussion. The temporal factor allowed users to organize their thoughts and respond without interruption (Beals, 1989; Black et al., 1983).

Computer-mediated communication allowed preservice teachers to engage in a total languaging process. Moon (1989) refers to four modes in the languaging process that facilitates transformation of teaching knowledge into practical knowledge. These include the productive modes of talking and writing, and the receptive modes of reading and listening. The preservice teachers in this study were engaged in the productive and receptive modes.

The process of language, facilitated by computer-mediated communication, transformed experience into practical knowledge. Pedagogical beliefs evolved when preservice teachers discussed experiences as they wrote and read. Discussions clarified and developed an understanding of practice in the field.

Opportunities for professional growth increase when the student and coach enter a dialogue in pursuit of meaning (Moon, 1989; Schon, 1987). This study demonstrated the same result. As coach, the faculty contact person facilitated the theory/practice dialectic.

Schon (1987) states that a skilful coach during a practicum facilitates reflection-in-action. When the dialogue between student and coach works well, it involves reciprocal reflection-in-action. The student reflects on the words and actions of the coach. At the same time, the student reflects on his or her performance. The coach examines the student's knowledge and responds in ways that might facilitate that reflection. The coach provides advice or criticism, asks questions or offers explanations. Suggestions must fit the immediate concern if they are to be effective in assisting the student to improve as a teacher.

In this study, the faculty contact person responded to the needs of the preservice teachers. By questioning, probing, and supporting the efforts of the preservice teachers, the faculty contact person linked theory with practice. On the other hand, preservice teachers described schooling conditions. These prompted the faculty member to reflect on his experiential knowledge. Exchange was reciprocal. Practice informed theory.

Zeichner (1992) challenges teacher educators by stating, "Major changes are needed that fundamentally alter power and role relationships in the practicum". Inquiry-oriented practicums develop reflection in practice. Reflection, states Zeichner, should help the student teacher realize the purposes of education. The process of understanding and improving one's teaching must start from reflection upon one's own experience. This

learning to teach process continues throughout one's teacher career. This process was frequently evident in the computer-mediated communication analyzed in this study.

Current practices in preservice teacher education often limit the potential for teacher growth by isolating teachers in the classroom. The intellectual exchange and social support gained through dialogue is important in helping preservice teachers clarify what they believe. If the use of technology can facilitate attempts to reflect in a community of educators, research needs to examine the role of the coach and develop a language of practice.

Exchanges on the UNIBASE network captured and validated the experiences of preservice teachers in the field. Advice, support, and encouragement were offered. The quality and success of the network exchanges were shaped by the contributions of the faculty contact person. In this study, the UNIBASE network enabled the preservice teachers to take charge of their professional development.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to describe computer-mediated interactions between preservice teachers and a faculty contact person during internship. This study may provide significant information about the thoughts, concerns, and decisions of preservice teachers. It may provide a focus for universities when planning future programs in preservice teacher education.

The population was 25 health and physical education preservice teachers enrolled in the 16-week guided practicum, known as internship. Fifteen chose to use a computer network to communicate during internship.

Participants were asked to connect to a computer network. Modems and other related equipment were supplied as needed. Participation was voluntary. Software on the network recorded messages posted to the bulletin board, journal, and scheduled real time conferences. At the end of the study, participants were asked to complete a survey questionnaire. In questionnaire item 7, participants used a 1- 5 scale to rate the usefulness

of the computer network. They also commented on the future uses of computer-mediated communication in a teacher education program. Three high users were interviewed about their computer knowledge, background, attitudes, and beliefs one month after the completion of internship.

Data, which was analyzed and presented in chapter four, included: (1) the frequency of function moves by preservice teachers in real time conferences, bulletin board, and journal, (2) the frequency of function moves by the faculty contact person in real time conferences, bulletin board, and journal, (3) the frequency of function moves by the technical assistant in real time conferences and the bulletin board, (4) the frequency of content moves by preservice teachers in real time conferences, bulletin board, and journal, (5) the frequency of content moves by the faculty contact person in real time conferences, bulletin board, and journal, (6) the frequency of content moves by the technical assistant in real time conferences and bulletin board, (7) a list of discussion topics and subtopics (October 28, 1992), and (8) the mean score ranking of usefulness of computer-mediated communication during internship.

The findings are based on an adapted method of discourse analysis used by Beals (1989). Frequency of function moves were used to identify the purpose for communication and the frequency of content moves helped

identify topics for discussion. A combined analysis of function and content was used to help identify patterns of communication.

Conclusions

The conclusions are:

Question 1.

For what purposes did health and physical education preservice teachers and the faculty contact person use computer-mediated communication to interact during internship?

Preservice teachers and the faculty contact person used the computer network for seeking and offering information. Purposes of communication (Beals, 1989) were guided by the roles, needs, and goals of network participants. Preservice teachers reported their schooling experiences. The context for the exchanges was established by offering information about the school, the staff, the students, and their teaching responsibilities. Sometimes preservice teachers asked for advice. The role of the faculty contact person was guided by the needs of the preservice teachers. He offered support and information. Often, the faculty contact person linked theory with practice. He expressed teaching concepts and guided decision making.

Question 2.

What topics were discussed by health and physical education preservice teachers and a faculty contact person during internship?

Preservice teachers and the faculty contact person used the network to share curriculum and planning ideas. The mean score ranking for usefulness in exchanging teaching ideas was 3.92 on a 1-5 scale. As Cutler (1992) noted the topics discussed on the network reflected the foremost thoughts, concerns, and decisions of the preservice teachers. Through shared experiences, preservice teachers came to know that others were encountering some of the same teaching difficulties. Usually the problems were solved by exchanging teaching ideas. Teaching ideas or techniques obtained from others aided curriculum planning.

Question 3.

What patterns of communication emerged in computer-mediated discussions by health and physical education preservice teachers and the faculty contact person during internship?

The computer network was used by preservice teachers to reflect on practice and solve problems. As a result of this use preservice teachers gained a better understanding of practice in the classroom.

This study demonstrated that different forms of computer-mediated communication was used by the preservice teachers. It reflected different purposes, content, and patterns of communication during internship. The provision for choice allowed the preservice teachers to communicate in the bulletin board, journal, and conference areas. Preservice teachers used the bulletin board to set the context for their schooling experiences. Posted messages in this area described the school, time schedules, subjects taught, and grade levels. Electronic journals were used by preservice teachers to reflect on teaching practice. More pedagogical statements were made in the journal than in any other area on the network. Real time conferences were used to discuss the immediate concerns of the preservice teachers. The preservice teachers appeared to select the area that was most available and convenient at the time.

The process of dynamic journaling emerged from the analysis of the real time conferences. Discussions followed a problem-solving model. The ideas generated were multiple, instant, and varied. The preservice teachers who engaged in these conversations appeared to construct a broad personal theory on learning to teach. These constructions were often

facilitated by the faculty contact person. Dynamic journaling has been identified as the term used to describe this learning process.

This study was limited by the topic categories selected for describing the preservice teacher conversations. A qualitative design could provide another alternative for describing, interpreting, and explaining the field experiences of preservice teachers. Another study could investigate some of the barriers non-users identify as explanations for their non-use when confronted with an opportunity to use technology as a means to communicate during the field experience.

This study was unique because software on the electronic network recorded all preservice teacher entries on a bulletin board, in electronic journals, and in real time conferences. The continued collection of network data provides opportunities for further study on the professional development of preservice teachers.

Recommendations

These recommendations, based on a study of computer dialogue between preservice teachers and a faculty contact person, suggest opportunities for further research.

1. Another study should investigate the process of dynamic journaling and its role in the professional growth of preservice teachers.

2. A study should investigate the developmental language in preservice teacher electronic journals. This may help teacher educators better understand the transformation process in professional development when preservice teachers learn to teach.

3. A similar study should be conducted with other samples of preservice teachers in the Faculty of Education at the University of Regina. This may help discover how preservice teachers in various subject areas and different programs develop professionally.

4. A similar study should be conducted with a larger network of professionals including co-operating teachers and administrators. The processes of teaching and learning may enhance the educational perspective for both preservice and experienced educators. The relationships between the educational actors in this larger community can be examined.

5. A comparative study should be done between traditional supervisory methods and on-line coaching to discover if there is a significant difference in interaction, self-analysis, and reflection of preservice teachers.

6. The University of Regina should continue to seek ways to integrate communication technology in a teacher education program. This is especially important as technology is increasingly affecting the way we live.

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APPENDIX A

Ethics Approval

Letter of Confirmation

Follow-up Letter to Interns

Questionnaire

Interview Questions

Appendix A-1

University of Regina

Office of Associate Vice-President and Dean
Faculty of Graduate Studies and Research

Regina, Saskatchewan
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Tel (306) 585-4161

Fax (306) 585-4893
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TO: Ethelwyn Dzuba

FROM: Dr. D. Alfano, Acting Chair,
Research Ethics Review Committee

DATE: October 14, 1992

Re: Computer-Mediated Communication: A Look at the Field Experience.

Please be advised that the committee has considered this proposal and has agreed that it is:

✓ 1. Acceptable as submitted.
(Note: Only those applications designated in this way have ethical approval for the research on which they are based to proceed).

____ 2. Acceptable subject to the following changes and precautions:
(Note: These changes must be resubmitted to the Committee and deemed acceptable by it prior to the initiation of the research. Once the changes are regarded as acceptable a new approval form will be sent out indicating it is acceptable as submitted.)

____ 3. Unacceptable to the Committee as submitted. Please contact the Chair for advise on whether or how the project proposal might be revised to become acceptable (ext. 4161/5186).

/sm

c: Applicant
Academic Unit Head
(Ethics1.Doc)

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Appendix A-2

October 16, 1992

Dear Preservice Teacher,

Thank you for your interest in the research I will be doing on the use of computer-mediated communication during internship. While we know how busy you will be, we hope you will participate in this research. I hope to discover how student teachers can use computer-mediated communication when they are in the field experience. While research on teaching has taught us much about what teachers do, we are only beginning to understand how teachers adapt to the classroom. Because you will spend some time reflecting about your experiences, you can be a real help.

You are invited to participate in the study "Computer-Mediated Communication: A Look at the Field Experience". Your participation will provide valuable insight into the field experience component of the professional preparation process. The information you provide may be personal. All information sources will remain confidential. Participation is voluntary. You have the right to drop out at any time.

During your internship you must plan and reflect about your teaching experiences. You will be invited to describe your classroom activities in a computer EFD400 discussion area. This is a bulletin board where you can ask others for ideas, share lesson plans or talk about the "good" and "bad" of your day's activities. This study is designed to investigate whether computer-mediated communication provides support as you interact with your peers and a faculty contact person. All reported electronic dialogue will be anonymous. I will examine the dialogue data to discover communication and support patterns regarding what it means to learn to teach. A computer program will be used to analyze dialogue. At the close of the data collection period I will ask for three case study volunteers. These volunteers will be interviewed to better understand the computer-mediated communication process. All participants will be asked to complete a brief questionnaire at the end of the study. The results of the study may add to the knowledge we have on computer-mediated communication patterns.

If at any time you have a question, call me at 585-4535 (office) or 584-0270 (home) or leave e-mail to edzubaa. Stacey Molleken also will be on-line to provide assistance. If you are willing to participate, sign below and return the form to me in enclosed envelope or send your response electronic mail. Thank you for your time and interest.

Sincerely,
Ethelwyn Dzuba

Appendix A-3

November 1, 1992

Dear Intern,

Thank you for responding to the Ethics Letter with approval. I am hoping, with your participation, I will collect enough computer data to facilitate an understanding of computer-mediated communication in the field experience. This is how it can happen.

First, you need to be on-line. Enclosed please find an information leaflet **"Tips on Getting Started."** Although this leaflet may appear technical at first, it does clearly explain the procedure. If you are not on-line, please follow the steps.

Secondly, you have an option to dialogue with Dr. Ray Petracek and others in the field experience through on-line conferences or bulletin board postings. The on-line conferences are "live", "chatting in real time." Stacey has facilitated this experience by being available every Wednesday at 8:00pm. You are invited to participate.

"On-Line Conferences"
Wednesdays, 8:00 pm.

You may also choose, at your convenience, to post descriptions of your field experience in the discussion area. You will find this area under on-line courses - 89; efd400; 2 - discussion/conference area. Dialogue in this area, relative to the internship experience, may describe classroom situations, the school environment, lessons plans or other experiences you wish to share. You may post or respond to entries at any time.

Thirdly, you can share your internship experiences with a faculty contact person in the journal area. This area is closed for private discussion between you and the faculty contact person.

Once again, I would like to thank you for participating. I hope to see you on-line and share in your internship through this innovative experience.

Happy Computing!

Ethelwyn Dzuba

APPENDIX A-4

SURVEY OF COMPUTER-MEDIATED COMMUNICATION: A LOOK AT THE FIELD EXPERIENCE

Please return the survey by December 18 in the envelope provided. The survey should take about 15 minutes to complete. Thank you for your assistance.

DIRECTIONS: Please circle the appropriate response.

1. Field Placement — rural urban
2. Location of computer hardware — school home

3. ***Sometimes it may be difficult to connect or make entries on a telecommunication system.*** Please circle your rating using the following scale:

1 = almost always, **2** = often, **3** = sometimes or **4** = never.

	almost always	often	sometimes	never
Too busy with teacher preparations	1	2	3	4
Tried to connect, but line busy	1	2	3	4
Tried to connect, but couldn't make connection	1	2	3	4
Connected, but didn't know how to use system	1	2	3	4
Nothing to talk about	1	2	3	4
Fear of evaluation	1	2	3	4

Other reason(s)_____

4. I used the computer to communicate, at least once, during my internship.

yes no

If yes, please turn to next page.

If no, please turn to question number 9 on page 3.

5. Indicate approximately how many times you accessed the following on the computer network during your internship.

	never	(1 - 5)	(6 - 10)	10+
Bulletin Board	1	2	3	4
Electronic Mail	1	2	3	4
Scheduled Conferences	1	2	3	4
Impromptu Conferences	1	2	3	4
Journal	1	2	3	4
Electronic Library	1	2	3	4
Other _____	1	2	3	4

6. What percentage of your total time on the computer network was spent in the following areas?

Bulletin Board	_____%
Electronic Mail	_____%
Scheduled Conferences	_____%
Impromptu Conferences	_____%
Journal	_____%
Electronic Library	_____%
Other _____	_____%
Total	100 %

7. *From this list select up to five explanations for using the electronic network when learning to teach.* Rate these on a scale from 1 to 5 with 1 = least important and 5 = most important

_____ assisting with lesson and curriculum planning

_____ reflecting on philosophy of education

_____ assisting with classroom management issues

_____ keeping in touch with friends

_____ providing a broader perspective on educational issues

_____ increase communication with faculty member

_____ increase reflection on critical events

_____ giving moral and emotional support

_____ exchanging teaching techniques

_____ Other _____.

8. Do you think computer-mediated communication helped you learn to teach?

yes no undecided

Please indicate your reason(s).

9. What suggestions do you have for incorporating computer communication technology in a teacher education program?

List two or three suggestions.

10. Would you be interested in using computer-mediated communication technology in your first year of teaching?

yes no undecided

Please indicate your reason(s).

Appendix A-5

Interview Questions

1. How long have you been using the system?

2. Did you feel that your skills were adequate for use during the internship?

3. When were you most likely to use the electronic network? after a critical event? to reflect in your journal? after a good day? request for assistance in planning?

4. Did you use it for impromptu conferences, scheduled conferences?

5. If you logged on the system for less than five minutes, what did you do?

   If you logged on for more than five minutes what were you likely to do?

6. Did you use the system for help in planning? In what way(s)?

   Was the resource materials library beneficial to you? Suggestions for future use?

7. The system appears valuable for keeping in touch with peers. Did you find the system enhanced your support network? In what way(s) do you agree or disagree?

8. Some students felt that the system was more effective for reflecting on critical events rather than discussing classroom management techniques. How would you explain this?

9. Some suggest the system provides a means for solving problems. Would you agree or disagree?

10. How would you use the system if you were a first year teacher?

    If a network for beginning teachers was established, what would you consider to be necessary for it's success?

APPENDIX B

Summary of System Usage by Participant

Summary of System Usage by Participant

Users	Subjects	Logons	Minutes	Bulletin Board	Journal	Confer -ences
Gerry	S1	43	1349	4	2	5
Joan	S2	70	593	1	3	1
Marv	S3	7	64	1	0	1
Sue	S4	64	506	7	6	1
John	S5	10	92	1	0	1
Brent	S6	8	183	1	0	1
Gail	S7	10	112	2	0	1
Tim	S8	1	0	0	0	0
Renee	S9	24	474	3	0	2
Kevin	S10	37	254	1	0	2
Rhonda	S11	13	161	1	4	0
Daryl	S12	47	337	0	0	0
Randy	S13	28	513	0	0	1
Candace	S14	27	345	1	2	0
Paul	S15	22	192	3	1	0
Lloyd	S16	21	293	0	0	2
Steven*				18	17	7
Frank*				16	0	5
Total		**432**	**5468**	**60**	**35**	**30**

*Indicates faculty or staff person

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APPENDIX C

Descriptions of Conversational Act Categories

Descriptions of Conversational Move Categories

Descriptions of Topic Coding Categories

Examples of Act, Move, and Topic Coding
on the Bulletin Board

Examples of Act, Move, and Topic Coding
in Real Time Conferences

Appendix C-1

Descriptions of Conversational Act Categories

summons - function is to address a message to a person or group of persons.

metastatement - function is to comment about the structure of a message.

informative - function is to elaborate on a topic in either an additive, adversative, or causative manner.

elicitation - function is to request a verbal response. Realized by a question or a request for a response.

directive - function is to request or command reader to do something. Usually realized by calling attention (Think about...) or giving advice.

comment - function is to restate, paraphrase, or qualify an earlier statement. Distinct from informative in that content of a comment is not new.

reply - function is to directly respond to an elicitation.

acknowledgement - function is to show that informative or directive is received and understood.

apology - function is to apologize for an offense.

evaluation - function is to comment on the quality or appropriateness of another message.

greeting - function is to greet one or more persons.

closing - function is to bring message to a close.

signature - function is to indicate authorship of message.

expressive - function is to express emotion. Realized by exclamations.

Appendix C-2

Descriptions of Conversational Move Categories

seeking advice (SA) - realized by a request for advice.

offering advice (OA) - realized by a directive, usually in reply to a request for advice. Often in the first person.

seeking information (SI) - realized by a request for information.

offering information (OI) - realized by informative. Often in the third person.

offering emotional support (OS) - message offers support to another.

reporting experiences RE+ (positive), RE= (neutral), RE- (negative). Realized by the use of first person.

offering humour (OH) - message intended to communicate irony or humour.

expressing emotion (EE) - realized by the use of emotion verbs. For moves that cannot be classified as "reporting experiences".

evaluation (EV) - function is to comment on the appropriateness of another message.

eliciting discussion (ED) - realized by a request for a verbal response without seeking advice.

offering opinion (OO) - realized by expressing an opinion on a new topic or subtopic. Usually begins comment with "I think...".

challenge (C) - realized by a disagreement with another's opinion offered in a prior message.

defense (D) - realized by a defense of one's opinion, generally after a challenge.

acknowledgement (AC) - function is to acknowledge receipt of information, advice, or support.

greeting (GR) - function is greet another person.

announcement (AN) - function is to announce a specific event.

apology (AP) - function is to apologize for an offense.

Appendix C-3

Descriptions of Topic Coding Categories

Adolescent development (AD) is any reference to adolescent growth and development. This differs from student behaviour which is demonstrated by various kinds behaviour in this period of growth and development.

Curriculum and planning (C&P) suggests any reference to curriculum lesson planning, goals, objectives, concepts and evaluation, and how the intern plans to meet objective(s).

Management and discipline (M&D) refers to any description of student behaviour that is causing the intern some anxiety.

Pedagogy (P) refers to the intern's best way of knowing how to teach through description of a teaching act, or suggestion of possible solution.

Personal life (PL)is any reference to the intern's personal life, separate from personal references to teaching and the classroom environment.

Policy issues (Pol) are those related to statements in the university program, school program or Sask Education program that suggest specific standards or requirements be met.

Student behaviour (SB) is behaviour that is not causing the intern anxiety but is part of adolescent development.

Student diversity (SD) is a reference to any other element of the student persona besides behaviour.

Student evaluation (SEV) is a reference to specific evaluation statements of student progress that is not a part of curriculum planning.

School and community (S&C) is a reference to the relationship between the two.

School environment (SE)is a reference to the collective behaviour of a particular school.

Student learning (SL) is a specific reference to a student's way of learning.

Subject matter knowledge (SMK) is a specific reference to what the intern knows about or wants information about relevant to a subject. This is not curriculum and planning.

Intern/pupil (I/P) relationships is any reference to a relationship between the intern and a pupil that is not specifically related to M&D.

Intern (I) is a reference to the personal and professional growth and development of the intern.

Intern/co-operating teacher (I/C) is a reference to the relationship between the intern and the co-operating teacher.

Teacher education preparation (TEP) is any reference to the teacher education program.

Technical (T) is a reference to any aspect of using computer mediated communication in the study.

Appendix C-4

An example of Act, Move, and Topic Coding for a Bulletin Board Message

	Act	Move	Topic
Hi there! This is Regina's only Monarch checking in.	greeting	GR	PL
I read a few of the previous entries and its good to see that many of us are getting on line.	acknowledge	AC	T
Up to this point internship has been a lot of fun and has been quite a learning experience.	informative	OI	TEP
I have learned many of the administrative types of duties a teacher has and some of them can be quite tedious, but generally they are not a problem. Hey it just comes with the territory.	informative	RE-	SE
Anyway I will be talking to quite a few of you in the future and hope to exchange some ideas.	informative	SI	C&P
To date, I have taught a mental health unit in Health and have just recently been given a phys. ed. also. I will be wrapping up a nutrition unit and a mini-unit on bones and muscles in the near future. In Phys.Ed I am currently teaching wrestling.	informative	RE+	TEP
If anyone has some good resources on these units I would like to talk to you.	directive	SA	C&P
I am always looking for new ideas to use in my class.	comment	SI	C&P
I will talk to you later! May your experiences turn out first and goal!	closing		

Appendix C-5

Example of Act, Move, and Topic Coding in a Segment of a Real Time Conference

	ACT	MOVE	TOPIC
Gerry= I also say that any in class work, written or verbal (group work) counts towards att/part. unless it is an assignment. Sometimes I have to remind the students.	informative	OI	C&P
Sue= This is Gail - In my evaluation I am using the Hellison's level. The four levels control, involvement, self-control, and caring. This is for the participation marks and at our school they get a mark out of six each day. So for the control level is worth 1, involvement - 1, self-control - 2, and caring - 2, a total mark of 6.	informative	OI	C&P
Steven= Renee - About the only thing that comes to mind at this time would/might be a personal record or personal best approach. To get him a positive profile in front of his peer group.	comment	OA	P
Sally= It sounds like you have a very unenviable situation Renee...	comment	OO	M&D